THE
AMERICAN
YEAR BOOK

1910

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THE AMERICAN
YEAR BOOK

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THE AMERICAN YEAR BOOK

A RECORD OF EVENTS AND PROGRESS

1910

EDITED BY

S. N. D. NORTH, LL.D.

UNDER DIRECTION OF A SUPERVISORY BOARD
REPRESENTING NATIONAL LEARNED SOCIETIES

NEW YORK AND LONDON
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1911

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PREFACE

THIS publication is the first volume in what is expected to be an annual series. It was projected early in 1910 by a group of men who believed that such a work was needed, and that it could best be carried out by the cooperation of the national learned and technical societies. Regularly designated representatives or members of thirty-two such societies have taken part in the preparation of this volume, either by their own contributions, or by suggesting writers, or by supervising the work of such writers. It is intended to be the work of a body of experts, each reviewing the field with which he is most familiar.

The difficulties in forming the necessarily complicated organization, and in arranging details which would affect many successive volumes, have been considerable; and defects in the first publication are inevitable. The field of human interests is vast, and in each topic a condensed form of treatment is necessary in a book to be thumbed over for daily reference. The Supervisory Board expects to profit by the experience of the first year, and will welcome criticisms and suggestions which will give future issues greater usefulness.

The AMERICAN YEAR BOOK is intended for the needs of writers and searchers of every kind. Because of its inclusion of scientific subjects, it has been necessary to limit the political and statistical material which is the staple of many annual handbooks; the book does not aim to treat everything that could be useful, but throughout to select from the enormous mass of details those things which, in the judgment of experts in that field, are most significant, most permanent in value, most likely to answer the searchers' questions.

In this first issue, many subjects are briefly summarized up to the beginning of the year 1910 as a point of departure. In future volumes reference on such subjects can be made back to the preliminary statements in this first volume. The current announcements of the Thirteenth United States Census have been utilized up to the last moment before going to press.

The AMERICAN YEAR BOOK does not aim to be a rival of other annual publications, either foreign or domestic. Details as to elections, the personnel of state and municipal governments, political personalities, societies, and educational, literary, and scientific institutions have deliberately been reduced, in order to make room for material of a kind not found in most of the annuals. The AMERICAN YEAR BOOK appeals first of all to students in all fields, who wish a record of progress, not only in their own but in other departments of human endeavor. It is intended also as a handbook for busy men, editors, contributors, professional men, teachers, scientific workers, engineers, practical and business men, who wish to verify or confirm points that arise in their minds; and to serve as a handy body of reference material settling questions of fact. Throughout the work the object of the Supervisory Board and the Managing Editor has been to make the volume convenient for the user; hence the YEAR BOOK is arranged on a plan entirely unique in publications of this general character. It is intended to make reference easier by subdividing material into departments, by putting cognate subjects into close association, and by liberal cross reference, making it easy to turn at once to the discussions relating to any subject. A full and carefully analyzed index is also provided, in order to open up all remote connections and relations of a topic. This arrangement by groups of affiliated subjects, instead of haphazard or alphabetical succession of topics, is more convenient, and at the same time more scientific.

The AMERICAN YEAR BOOK undertakes to be "a record of events and progress." In some subjects, as Political History, the thing most noticeable is the annual group of occurrences—deaths, accidents, bills, speeches, legal decisions, and the like. In other subjects, as, for example, Chemistry or Engineering, the striking thing is progress, set forth not so much in incidents or by dates as in the increase of knowledge and a consequent slow alteration of the point of view. The effort to measure and set down the annual advance in such subjects is a novelty in general handbooks, and the Supervisory Board hopes that it will not only be valuable to the specialist, who will find here a summary of things with which he is acquainted through his own special journals, handbooks, and publications, but that it will offer a handy means of noting what men are doing in other fields.

In the various fields of human endeavor it is impossible entirely to separate the United States from the world at large; the principles of government, of economics, of social science, are the same for all mankind. In the summaries of progress the YEAR BOOK takes account of other countries; but it aims especially to record progress in the United States, dealing with other countries in so far as their record is inextricable from that of the United States, and in so far as the special circumstances make them interesting to American readers. Thus, English politics, foreign relations with the Orient, are more interesting to the American reader than Austrian politics or relations with the Scandinavian countries. The chief attention of the book, therefore, is directed to American progress without ignoring notable advances or events elsewhere.

The association of a number of the learned and technical societies of the United States in a project designed to be of service to all, and an advantage to learning in general, is a new thing in the United States. The organization is informal. Some societies have officially designated a member of the Supervisory Board; others have acted unofficially. In a few cases the member acts with the knowledge but without the conferred authority of his society. In no case is any society as such responsible for the matter that appears in the volume, nor does any society take the slightest financial responsibility. The coöperation of the societies and their members in the Supervisory Board has been greater or less, according to circumstances; but the Chairman of the Board and the Managing Editor have sought and found sympathetic suggestion from all representatives. As time passes it is natural to expect that the number of these associated organizations will increase, and that the representatives of these societies may take a more definite part in the production of the material which appears in the AMERICAN YEAR BOOK.

The Chairman of the Board and the Managing Editor beg the indulgence of the public for any errors of type or of statement, which are unavoidable in the necessarily rapid putting together of this large body of material. Repetitions and occasional inaccuracies, with every effort, cannot all be eliminated.

SUPERVISORY BOARD AND CONSTITUENT SOCIETIES

The American Year Book has been established by conferences of members of national learned societies acting officially or unofficially in behalf of their societies, and organized as a Supervisory Board. The present membership of this Board is as follows:

Executive Committee: Albert Bushnell Hart, Chairman; William M. Davis, Hastings Hornell Hart, George H. Kirchwey, Alexander Lambert, Calvin W. Rice, John C. Rolfe.

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THE

AMERICAN YEAR BOOK

A RECORD OF EVENTS AND PROGRESS

I. INTERNATIONAL STATISTICS

A great number of statistical tables appear in the text of the AMERICAN YEAR BOOK, in close association with the discussion of the subjects to which they relate. In Department I, International Statistics, and Department II, National Statistics, certain tables are brought together for condensation of statement and convenience of reference, and do not appear elsewhere.

TABLE I

THE WORLD'S AREA AND POPULATION

	Square Miles.	Ratio.	Population. *In Millions.*	Ratio to Total Population.
Arctic....	4,636,784	2.3	......	......
Antarctic..	9,003,091	4.7	......	......
Atlantic...	38,639,876	19.5	......	......
Indian....	25,502,318	13.3	......	......
Pacific....	65,687,780	32.2	......	......
Five Oceans	143,469,849	73.0	......	......
Europe....	3,902,627	2.0	437	26.9
Africa.....	12,17[illegible]01	6.1	126	7.7
Asia......	16,074,188	8.1	851	52.3
Oceania...	4,250,386	2.1	51	3.1
N. America	10,046,367	5.1	116	7.2
S. America.	7,148,377	3.6	45	2.8
Five Earth Divisions ..	53,593,508	27.0	1,626	100.0
Total...	197,063,357	100.0	......	......

NOTE.—The accompanying table was compiled by M. Emile Levasseur, Vice President of the International Institute of Statistics, who says in regard to it:

The area of the oceans is approximate. That of the divisions of the earth differs according to the position which writers assign to each part (consequently the population also differs). For example, the German geographers assign to Asia almost the whole of Malay, while we make it a part of Oceania; many geographers do not make Oceania a separate division, but combine Australia and the islands of the Southern Pacific Ocean. They also make a separate division of the northern polar regions. We attach these regions to the three parts of the world to the north of which they are situated. The German geographers do not include Iceland in Europe; but many assign to Europe the part of the European government of Russia situated east of the Ural Mountains, as well as the provinces of the kingdoms of Portugal (Madeira) and Spain (Canaries, etc.) situated in Africa.

II. POPULATION OF THE WORLD ACCORDING TO RACE

(Estimate by John Bartholomew, F.R.G.S., Edinburgh, 1910)

RACE.	Location.	Number.
Indo-Germanic or Aryan (white) .	Europe, Persia, etc.	625,000,000
Mongolian or Turanian (yellow & brown) . .	Greater part of Asia.	630,000,000
Semitic or Hamitic (white). . . .	North Africa, Arabia.	65,000,000
Negro and Bantu (black)	Central Africa. .	150,000,000
Hottentot and Bushman (blk.)	South Africa	150,000
Malay and Polynesian (brown)	Australasia & Polynesia.	35,000,000
American Indian (red)	North & South America.	15,000,000
Total.	. . . .	1,520,150,000

III. EUROPEAN LANGUAGES SPOKEN

(Mulhall's Estimates)

LANGUAGES.	Number of Persons Spoken by.		Proportion of the Whole.	
	1801.	1901.	1801.	1901.
English . .	20,520,000	130,300,000	12.7	29.2
French . .	31,450,000	52,100,000	19.4	11.7
German . .	30,320,000	84,200,000	18.7	18.8
Italian . . .	15,070,000	34,000,000	9.3	7.6
Spanish . .	26,190,000	46,500,000	16.2	10.4
Portuguese. .	7,480,000	15,000,000	4.7	3.3
Russian.	30,770,000	85,000,000	19.0	19.0
Total.	161,800,000	447,100,000	100.0	100.0

IV. VALUES OF FOREIGN COINS, OCTOBER 1, 1910

COUNTRY.	Standard.	Monetary Unit.	Value.
Argentina.	Gold	Peso	$0.965
Austria-Hungary	"	Crown	.203
Belgium.	"	Franc	.193
Bolivia.	Silver	Boliviano	.389
Brazil.	Gold	Milreis	.546
British possessions N. A. . . .	"	Dollar	1.000
British Honduras	"	"	1.000
Cen. American States:			
Costa Rica. .	"	Colon	.465
Guatemala .	Silver	Peso	.391
Honduras . .	"	"	.391
Nicaragua. .	"	"	.391
Salvador. . .	"	"	.391
Chile	Gold	"	.365
China.	Silver	Tael	.601
		Dollar:	
		Hongkong	.421
		British	.421
		Mexican	.424
Colombia.	Gold	Dollar	1.000
Denmark.	"	Crown	.268
Ecuador.	"	Sucre	.487
Egypt.	"	Pound (100 piasters)	4.943
Finland	"	Mark	.193
France.	Gold	Franc	.193
German Empire .	"	Mark	.238
Great Britain. . .	"	Pound ster.	4.866½
Greece.	"	Drachma	.193
Haiti.	"	Gourde	.965
India (British) . .	"	*a*Pound ster.	4.866½
Italy.	"	Lira	.193
Japan.	"	Yen	.498
Liberia.	"	Dollar	1.000
Mexico.	"	Peso	.498
Netherlands. . . .	"	Florin	.402
Newfoundland . .	"	Dollar	1.014
Norway.	"	Crown	.268
Panama.	"	Balboa	1.000
Persia.	Silver	Kran	.072
Peru.	Gold	Libra	4.866½
Philippines.	"	Peso	.500
Portugal.	"	Milreis	1.080
Russia.	"	Ruble	.515
Spain.	"	Peseta	.193
Straits Settlem'ts	"	Pound ster.	4.866½
Sweden.	"	Crown	.268
Switzerland.	"	Franc	.193
Turkey.	"	Piaster	.044
Uruguay.	"	Peso	1.034
Venezuela.	"	Bolivar	.193

a The sovereign is the standard coin of India, but the rupee ($0.3244⅓) is the current coin, valued at 15 to the sovereign.

NOTE.—The coins of silver standard countries are valued by their pure silver contents at the average market price of silver for the three months preceding the dates of this table. France, Belgium, Italy, Greece, Roumania and Switzerland constitute what is known as the Latin Union, and their coins are alike in weight and fineness, occasionally differing in name. The same system has been in part adopted by Spain, Servia, Bulgaria, and Russia, but they have not joined the Union.

V. STATISTICS OF THE PRINCIPAL COUNTRIES OF THE WORLD

COUNTRIES.	Square Miles.	Population.	Capitals.	Present Head.	Acceded.
Abyssinia	200,000	10,000,000	Adis Ababa.	Menelik II.	Oct. 26, '96
Afghanistan	250,000	4,500,000	Kabul.	Habibullah Khan.	Oct. 3, '01
Argentina	1,135,840	6,489,023	Buenos Aires.	Roque Sáenz-Peña.	Oct. 11, '10
Australia	2,972,573	4,052,878	Melbourne.	Earl Dudley.	Aug. 7, '03
Austria-Hungary	241,333	45,405,267	Vienna; Budapest.	Francis Joseph I.	Dec. 2, '48
Baluchistan	134,000	915,000	Kalat.	Mir Mahmoud Khan II.	Nov. 10, '94
Belgium	11,373	7,386,444	Brussels.	Albert I.	Dec. 23, '09
Bolivia	708,195	2,267,935	Sucre.	Elidoro Villazon.	Aug. 6, '09
Brazil	3,218,130	20,515,000	Rio de Janeiro.	Marshal Hermes da Fonseca.	Nov. 15, '10
British Empire	11,433,283	392,846,835	London.	George V.	May 6, '10
Bulgaria	24,380	4,158,409	Sofia.	Ferdinand.	Aug. 14, '87
Canada	3,745,574	6,504,900	Ottawa.	Earl Grey.	Sept. '04
Chile	291,500	3,249,279	Santiago.	Ramon Barros Luco	Dec. 23, '10
China	4,278,352	428,710,000	Peking.	Hsuan-Tung.	Dec. 3, '08
Colombia	438,436	4,320,000	Bogota.	Carlos E. Restrepo.	July 15, '10
Costa Rica	23,000	368,780	San Jose.	Ricardo Jimenez.	May 8, '10
Cuba	45,883	2,048,980	Havana.	Jose Miguel Gomez.	Nov. 14, '08
Denmark	15,592	2,605,268	Copenhagen.	Frederick VIII.	Jan. 29, '06
Ecuador	116,000	1,500,000	Quito.	Eloy Alfaro.	Jan. 1, '07
Egypt	400,000	11,140,000	Cairo.	Abbas Hilmi.	Jan. 8, '92
France	207,054	39,252,267	Paris.	C. A. Fallieres.	Jan. 17, '06
Germany	208,780	63,886,000	Berlin.	Wilhelm II.	June 15, '88
Great Britain	121,391	43,659,121	London.	George V.	May 6, '10
Greece	25,014	2,645,175	Athens.	George I.	Mar. 18, '63
Guatemala	48,290	2,992,000	New Guatemala.	Manuel E. Cabrera.	Feb. 1, '05
Haiti	10,204	2,030,000	Port-au-Prince.	Antoine Simon.	Dec. 17, '08
Honduras	46,250	745,000	Tegucigalpa.	Miguel R. Davila.	Feb. 1, '08
India	1,766,642	294,361,056	Calcutta.	Sir Charles Hardinge	Nov. '10
Italy	110,659	34,270,000	Rome.	V. Emanuele III.	July 29, '00
Japan	147,655	47,674,460	Tokio.	Mutsuhito.	Feb. 13, '67
Korea	71,000	10,000,000	Seoul.	Chok Yi.	July 20, '07
Liberia	45,000	2,120,000	Monrovia.	Arthur Barclay.	Jan. '04
Madagascar	228,000	2,701,000	Tananarivo.	Gen. M. Augagneur, Gov.	—— '05
Mexico	767,000	13,607,260	Mexico.	Porfirio Diaz.	Nov. 30, '77
Monaco	8	19,210	Monaco.	Albert I.	Sept. 10, '89
Montenegro	3,630	250,000	Cettinje.	Nicholas I.	Aug. 14, '60
Morocco	219,000	5,000,000	Fez.	Mulai Hafid.	Aug. 25, '08
Netherlands	12,648	5,825,198	The Hague.	Wilhelmina.	Sept. 6, '98
Nicaragua	49,200	600,000	Managua.	Juan J. Estrada.	Aug. 29, '10
Norway	124,130	2,240,032	Christiana.	Haakon VII.	Nov. 18, '05
Panama	32,380	500,000	Panama.	Federico Boyd.	Oct. 1, '10
Paraguay	196,000	715,841	Asuncion.	Manuel Condra.	Sept. 28, '10
Persia	1,024,360	9,500,000	Teheran.	Mhd. Ahmed Mirza.	July 16, '09
Peru	679,600	4,609,999	Lima.	Augusto B. Leguia.	Oct. 1, '08
Portugal	35,490	5,500,000	Lisbon.	Teophile Braga.	Oct. 5, '10
Roumania	50,720	5,956,600	Bucharest.	Carol I.	Mar. 26, '81
Russia	8,647,657	155,433,300	St. Petersburg.	Nicholas II.	Nov. 1, '94
Salvador	7,225	1,707,000	San Salvador.	Fernando Figueroa.	Mar. 1, '07
Santo Domingo	19,325	673,611	Santo Domingo.	Gen. R. Caceras.	July 1, '08
Servia	18,650	2,688,747	Belgrade.	Peter I.	June 25, '03
Siam	220,000	6,686,850	Bangkok.	Chowfa Maha Vajiravudh.	Oct. 23, '10
South Africa	473,954	5,302,468	Pretoria, Capetown.	Viscount Gladstone.	May 30, '10
Spain	194,783	18,618,086	Madrid.	Alphonso XIII.	May 17, '86
Sweden	172,876	5,430,000	Stockholm.	Gustav V.	Dec. 8, '07
Switzerland	15,975	3,559,349	Berne.	Marc-Emerl Ruchet	Jan. 1, '11
Tunis	64,000	2,000,000	Tunis.	Mehemed en Nasr Bey.	May 12, '06
Turkey	1,662,000	35,400,000	Constantinople.	Mehemed V.	Apr. 27, '09
United States	3,567,387	91,402,151	Washington.	W. H. Taft.	Mar. 4, '09
Uruguay	72,210	1,112,000	Montevideo.	Dr. Claudio Williman	Mar. 1, '07
Venezuela	393,976	2,664,241	Caracas.	J. V. Gomez.	Apr. 27, '08

VI. REVENUES, EXPENDITURES AND INDEBTEDNESS OF PRINCIPAL COUNTRIES OF THE WORLD

COUNTRY.	REVENUE AND EXPENDITURE.			Funded and Unfunded Debt.	Interest Charges.
	Year.	Revenue.	Expenditure.		
Argentina	1909	$91,550,186	$111,593,745	$463,790,171	$32,340,874
Australia	1910	75,514,680	36,435,420	*1,205,156,672	46,883,988
Austria-Hungary	1909	84,897,702	86,556,212	1,063,725,105	60,467,407
Austria	1909	488,143,439	488,530,572	960,997,758	35,322,309
Hungary	1909	315,822,929	315,813,171	1,146,500,658	37,136,118
Belgium	1909	119,505,782	122,121,324	718,672,986	34,613,354
Kongo	1910	7,670,844	9,694,977	20,089,409	1,260,306
Bolivia	1909	5,161,666	5,553,429	3,017,214	....
Brazil	1910	152,192,479	150,144,548	639,763,310	31,988,165
Bulgaria	1909	29,561,704	29,547,738	93,500,973	6,367,018
Canada	1910	134,394,500	115,395,774	470,663,046	13,098,161
Chile	1909	51,735,500	63,478,262	118,472,142	....
China	1908	21,221,722	21,221,722	601,916,605	92,375,017
Colombia	1909	17,223,818	13,702,310	22,865,640	1,980,559
Costa Rica	1909	4,315,471	4,315,471	16,225,923	....
Cuba	1909	25,342,198	21,257,754	....	....
Denmark	1908–9	25,020,261	27,815,840	68,057,034	2,753,263
Ecuador	1908	6,681,092	6,382,342	21,571,196	....
Egypt	1908	76,724,134	71,219,456	463,854,243	17,904,885
France	1909	852,399,350	852,748,626	5,898,675,451	186,802,380
Germany	1909–10	678,303,308	678,303,308	1,094,790,575	46,836,044
Great Britain	1909	735,660,630	740,039,120	3,665,029,561	143,370,000
Greece	1910	27,781,064	27,309,709	157,877,067	5,940,324
Guatemala	1909	2,954,383	4,233,255	13,694,445	....
Haiti	1908–9	3,825,948	3,627,383	26,468,849	1,906,715
Honduras	1907–8	1,583,111	1,707,634	110,982,932	237,591
India (British)	1909	356,953,395	356,953,395	1,346,997,187	41,681,212
Italy	1908–9	452,668,984	441,865,760	2,602,299,757	96,941,138
Japan	1909–10	258,426,783	258,422,713	1,287,604,261	76,283,536
Korea	1909–10	10,674,492	11,089,790	18,297,238	....
Liberia	1908–9	355,209	355,209	1,289,571	....
Mexico	1908–9	49,397,755	46,483,696	219,400,065	13,151,686
Morocco	....	....	....	39,758,000	....
Netherlands	1908	73,583,688	78,002,874	451,309,203	14,606,371
New Zealand	1908–9	44,330,608	43,260,095	346,439,001	10,645,075
Nicaragua	1907	510,953	514,326	25,211,075	....
Norway	1909	38,749,682	36,839,071	88,253,614	5,338,702
Panama	1909	2,973,292	2,900,000	....	....
Paraguay	1908	2,237,337	2,664,404	5,027,141	....
Persia	1907–8	7,174,400	7,174,400	16,737,500	....
Peru	1909	14,810,295	15,746,336	20,676,627	....
Portugal	1909–10	66.699,631	71,845,462	864,561,212	29,907,983
Roumania	1908–9	90,509,232	80,562,470	277,383,133	16,395,744
Russia	1908	1,348,613,945	1,368,191,645	4,558,152,565	204,766,421
Finland	1908	30,977,858	32,422,803	29,352,124	1,206,558
Salvador	1909	4,072,112	4,505,280	11,910,193	....
Santo Domingo	1909	4,523,160	4,532,322	13,486,370	1,200,000
Servia	1909	20,003,312	19,941,464	103,573,257	5,208,088
Siam	1908–9	21,466,180	24,147,206	19,466,000	....
Spain	1909	205,655,000	216,452,000	1,817,674,327	78,709,000
Sweden	1908	55,414,147	57,986,367	138,120,699	5,520,096
Switzerland	1908	28,446,489	29,119,721	257,400,446	10,272,786
Turkey	1909–10	133,777,433	157,745.205	527,983,636	36,494,753
United States	1910–11	675,511,715	659,705,391	2,652,665,837	21,275,602
Philippine Islands	1909	11,369,734	11,733,601	16.000,000	1,705,561
Uruguay	1909	23.366.830	21,075,330	135,805,784	....
Venezuela	1907–8	10.000,000	10,000,000	46,180,803	....

* 1909.

VII. COMMERCE OF THE PRINCIPAL COUNTRIES OF THE WORLD

COUNTRY.	FOREIGN COMMERCE.					LENGTH OF RAILWAYS.		TELEGRAPHS.			Post-offices.
	Year.	Imports of Merchandise.	Imports from United States.	Exports of Merchandise.	Exports to United States.	Date.	Miles.	Date.	Length of Line.	Length of Wire.	
		Dollars.	Dollars.	Dollars.	Dollars.				Miles.	Miles.	No.
Abyssinia	1908	1,385,100	....	1,627,000	....						
Afghanistan	1908	3,130,000	....	3,840,000	....	....	....	....	....	....	....
Argentina	1909	302,756,000	43,068,000	397,350,000	26,066,000	1909	15,849	1907	34,991	92,344	2,527
Australia	1908	*243,266,838	29,392,000	*317,545,659	11,215,000	1908	16,213	1907	46,401	29,452	7,558
Austria-Hungary	1909	563,162,000	44,996 000	468,469,000	11,792,000	1908	25,852	....	....	....	....
Belgium	1909	662,884,000	65,902,000	504,837,000	14,087,000	1908	2,913	1908	4,524	24,181	1,561
Bolivia	1909	11,819,000	3,479,000	18,162,000	....	1909	500	1908	3,782	....	198
Brazil	....	179,690,000	22,265,000	308,331,000	123,817,000	1909	12,209	1908	36,199	73,124	3,246
Bulgaria	1908	25,119,000	111,000	21,685,000	159,000	1908	995	1908	3,666	7,456	2,068
Canada	1910	369,815,000	118,834,000	279,247,000	104,199,000	1910	24,731	....	33,222	....	12,479
Chile	1909	94,349,000	9,601,000	110,314,000	19,649,000	1909	2,244	1907	....	22,384	942
China	1908	254,456,000	26,603,000	178,446,000	15,367,000	1906	3,746	1907	25,913	39,196	3,493
Colombia	1909	10,561,000	3,690,000	15,513,000	6,897,000	1909	510	1908	10,360	....	448
Costa Rica	1909	6,109,000	3,376,000	8,176,000	4,802,000	1909	405	1908	....	1,255	73
Cuba	1909	86,791,000	42,612,000	117,563,000	101,457,000	1909	2,330	1908	5,065	....	447
Denmark	1908	190,711,000	30,260,000	165,341,000	6,641,000	1908	2,141	1908	2,320	8,781	1,488
Ecuador	1908	9,165,000	1,994,000	62,190,000	3,768,000	1909	316	1908	2,564	....	81
Egypt	1909	110,851,000	1,065,000	130,029,000	5,602,000	1908	3,503	1908	7,839	21,295	1,388
France	1909	1,161,078,000	126,816,000	1,071,464,000	60,734,000	1908	29,716	1907	107,127	398,862	12,827
Germany	1909	1,962,642,000	305,261,000	1,596,378,000	120,791,000	1908	36,686	1908	130,772	386,438	49,838
Great Britain	1909	2,592,202,000	604,227,000	1,838,921,000	103,674,000	1908	23,205	1907–8	57,205	944,957	23,738
Greece	1907	28,770,000	1,421,000	22,701,000	2,179,000	1908	771	1907	5,573	10,125	852
Guatemala	1908–9	5,251,000	1,718,000	10,079,000	1,776,000	1909	435	1908	3,700	....	....
Haiti	1908–9	5,712,000	3,054,000	11,008,000	447,000	1909	64	1907	....	....	66
Honduras	1909	2,581,000	1,769,000	1,990,000	1,834,000	1909	100	1908	....	2,843	268
India (British)	1908–9	391,527,000	10,681,000	546,414,000	42,858,000	1908	30,576	1907–8	68,940	271,944	18,075
Italy	1909	598,582,000	78,164,000	356,476,000	39,338,000	1908	10,388	1907	32,038	138,890	9,652
Japan	1909	195,046,000	26,914,000	203,396,000	65,510,000	1908	4,898	1908	23,027	99,128	7,261
Korea	1907	20,365,000	1,453,000	8,207,000	472	1907	688	1908	3,192	6,759	486
Liberia	1908	966,000	50,000	884,000	1,000	....	....	....	....	....	....
Mexico	1909	78,266,000	45,280,000	115,550,000	86,472,000	1909	15,293	....	....	....	....
Morocco	1908	11,875,000	52,000	10,011,000	24,000	1908	14,857	1907	21,695	36,315	2,934
Netherlands	1908	1,129,577,000	129,552,000	872,982,000	81,177,000	1908	1,912	1907	4,484	21,356	1,445
New Zealand	1908	85,024,000	8,000,000	77,351,000	1,584,000	1908	2,703	1907	10,066	29,762	2,075
Nicaragua	1909	3,500,000	1,297,000	3,600,000	1,034,000	1909	171	1905	....	3,152	....
Norway	1908	100,803,000	4,852,000	64,341,000	1,651,000	1908	1,607	1908	6,506	12,856	5,099
Panama	1909	8,756,000	4,996,000	1,502,000	1,264,000	1909	77	....	....	....	....
Paraguay	1909	3,640,000	55,000	5,071,000	16,000	1909	155	1907	1,967	....	221
Persia	1908–9	31,077,000	22,000	25,987,000	17,000	1906	34	1908	6,630	9,698	144
Peru	1908	29,160,000	5,815,000	29,646,000	5,875,000	1909	1,500	1906	4,541	....	416
Portugal	1907	66,369,000	6,549,000	32,843,000	595,000	1908	1,690	1906	5,469	12,280	3,682
Roumania	1907	83,088,000	714,000	106,926,000	8,000	1908	1,995	1908	4,760	13,178	3,280

*1909

VII. COMMERCE OF THE PRINCIPAL COUNTRIES OF THE WORLD—*Continued*

COUNTRY.	FOREIGN COMMERCE.					LENGTH OF RAILWAYS.		TELEGRAPHS.			Post-offices.
	Year.	Imports of Merchandise.	Imports from United States.	Exports of Merchandise.	Exports to United States.	Date.	Miles.	Date.	Length of Line.	Length of Wire.	
		Dollars.	Dollars.	Dollars.	Dollars.				Miles.	Miles.	No.
Russia	1907	436,393,000	28,628,000	542,300,000	4,333,000	1908	41,136	1907	118,334	408,599	13,983
Finland	1907	73,158,000	......	51,215,000	......	1908	2,057	1907	......	......	1,704
Salvador	1909	4,176,000	1,344,000	6,361,000	1,879,000	1909	97	1907	......	2,398	80
Santo Domingo	1909	4,645,000	2,605,000	8,177,000	5,223,000	1909	175	1905	430	......	81
Servia	1908	14,212,000	91,000	15,006,000	383,000	1908	379	1908	2,137	6,038	1,450
Siam	1908–9	27,854,000	438,000	36,535,000	1,000	1908	550	1908	6,227	......	113
Spain	1909	183,839,000	23,686,000	177,079,000	7,022,000	1908	9,227	1907	22,270	50,018	4,577
Sweden	1908	163,194,000	16,155,000	129,181,000	2,605,000	1908	8,321	1907	6,047	19,325	3,947
Switzerland	1908	306,272,000	11,707,000	213,388,000	21,577,000	1908	2,763	1907	3,606	14,495	4,098
Turkey	1905–6	135,235,000	1,350,000	84,823,000	11,546,000	1908	973	1906	28,907	49,029	1,312
Crete	1908	4,067,000	15,000	3,546,000	73,000	......	......	......	228	......	26
United States	1910	1,557,819,988	......	671,416,014	......	1909	240,839	1909	......	1,639,359	59,580
Philippine Islands	1908–9	27,792,000	4,692,000	30,994,000	10,215,000	1908	292	1908–9	4,423	......	540
Uruguay	1908–9	37,156,000	3,135,000	45,789,000	2,107,000	1909	1,540	1909	......	4,849	800
Venezuela	1909	10,120,000	2,711,000	16,609,000	7,073,000	1909	540	1908	......	4,756	230

VIII. THE WORLD'S HOP CROP, 1909

[Excluding Canada, for which the census of 1901 shows a production during the preceding year of 1,004,216 pounds.]

COUNTRY.	1909.
North America:	
United States:	*Pounds.*
New York	8,000,000
California	12,000,000
Oregon	13,000,000
Washington	3,000,000
Total	36,000,000
Europe:	
Austria-Hungary:	
Austria	16,100,000
Hungary	2,200,000
Total Austria-Hungary	18,300,000
Belgium	2,500,000
France	3,000,000
Germany	13,356,000
Great Britain	24,022,000
Netherlands	158,000
Russia	8,125,000
Total	69,461,000
Australasia:	
Australia:	
Victoria	132,000
Tasmania	1,402,000
New Zealand	941,000
Total	2,475,000
Grand Total	107,936,000

IX. INTERNATIONAL TRADE IN HOPS, 1908

EXPORTS

	Pounds.
Austria-Hungary	15,498,272
Belgium	1,403,039
France	152,339
Germany	27,341,943
Great Britain	1,059,632
Netherlands	1,771,156
New Zealand	170,016
Russia	144,451
United States	21,423,869
Other countries	95,224
Total	69,059,941

IMPORTS.

Australia	973,814
Austria-Hungary	553,360
Belgium	6,025,351
British India	363,888
British South Africa	543,984
Canada	1,205,845
Denmark	1,340,961
France	4,907,929
Germany	6,154,864
Great Britain	29,922,256
Netherlands	3,386,709
Russia	1,191,722
Sweden	1,166,003
Switzerland	1,289,704
United States	7,369,684
Other countries	3,808,047
Total	70,204,121

I. INTERNATIONAL STATISTICS

WHEAT PRODUCTION AND TRADE

X. THE WORLD'S WHEAT CROP

COUNTRY.	PRODUCTION IN BUSHELS.	
	1908.	1909.
NORTH AMERICA:		
United States...	664,602,000	737,189,000
Canada:		
N. Brunswick.	349,000	395,000
Ontario......	18,057,000	16,262,000
Manitoba....	50,269,000	52,706,000
Saskatchewan	34,742,000	85,197,000
Alberta......	6,842,000	9,579,000
Other.......	2,175,000	2,605,000
Total......	112,434,000	166,744,000
Mexico........	8,000,000	8,000,000
Total......	785,036,000	911,933,000
SOUTH AMERICA:		
Argentina......	192,489,000	161,672,000
Chile..........	18,915,000	20,000,000
Uruguay.......	7,430,000	8,000,000
Total......	218,834,000	189,672,000
EUROPE:		
Austria-Hun'ry.	230,577,000	186,076,000
Belgium.......	13,963,000	15,506,000
Bulgaria.......	36,496,000	37,000,000
Denmark......	4,318,000	4,000,000
Finland........	135,000	135,000
France........	317,765,000	356,574,000
Germany......	138,442,000	138,000,000
Great Britain...	55,629,000	65,308,000
Greece........	8,000,000	8,000,000
Italy..........	152,236,000	164,587,000
Montenegro....	200,000	200,000
Netherlands....	5,121,000	5,000,000
Norway.......	333,000	316,000
Portugal.......	5,000,000	5,000,000
Roumania.....	54,813,000	56,751,000
Russia (Europ.).	489,162,000	711,479,000
Servia.........	11,495,000	13,000,000
Spain.........	119,970,000	144,105,000
Sweden........	6,756,000	6,978,000
Switzerland....	3,527,000	3,568,000
Turkey (Europ.)	25,000,000	30,000,000
Total......	1,678,938,000	1,951,583,000
ASIA:		
British India...	227,983,000	283,360,000
Cyprus........	2,601,000	2,600,000
Jap. Empire....	22,787,000	22,235,000
Persia.........	16,000,000	16,000,000
Russia (Asiatic).	77,237,000	71,792,000
Turkey (Asiatic)	35,000,000	35,000,000
Total......	381,608,000	430,987,000
AFRICA..........	60,257,000	66,531,000
AUSTRALASIA.....	51,806,000	73,712,000
Grand Total	3,176,479,000	3,624,418,000

XI. INTERNATIONAL TRADE IN WHEAT

COUNTRY.	1908.
EXPORTS	
	Bushels.
Argentina....................	133,610,896
Australia.....................	15,027,386
Austria-Hungary..............	14,720
Belgium......................	24,178,475
British India..................	4,289,344
Bulgaria......................	7,818,338
Canada.......................	52,502,903
Chile.........................	4,946,419
Germany......................	9,594,177
Netherlands..................	29,914,096
Roumania....................	26,247,384
Russia.......................	53,928,000
Servia.......................	3,319,526
United States................	92,779,509
Other Countries..............	10,379,838
Total.................	468,551,011
IMPORTS	
Austria-Hungary..............	290,334
Belgium......................	67,032,575
Brazil........................	9,551,415
Denmark.....................	3,593,773
France.......................	2,752,415
Germany.....................	76,814,333
Great Britain.................	168,629,046
Greece.......................	6,638,757
Italy.........................	29,026,788
Japan........................	1,319,524
Netherlands..................	40,159,483
Portugal.....................	4,604,041
Spain........................	2,902,246
Sweden.......................	7,599,881
Switzerland..................	12,140,012
Other countries..............	10,778,106
Total.................	443,832,729

"Dornbusch," on Sept. 1st, estimated the world's wheat crop for 1910 as 432,768,000 quarters, or 3,562,154,000 bushels, a loss of 160,000,000 bushels as compared with 1909, but a gain of 276,982,000 bushels over the short crop of 1908.

The figures for the production and trade in cereals are obtained in the "Year Book of Agriculture," published by the U. S. Department of Agriculture.

SUGAR PRODUCTION AND TRADE

XII. WORLD'S SUGAR PRODUCTION

COUNTRY.	1909–10
CANE SUGAR	
North America:	
United States:	*Tons.*
Louisiana	325,000
Texas	10,000
Hawaii	490,000
Porto Rico	280,000
Total United States (except Philippine Is.)	1,105,000
Central America	151,000
Mexico	130,000
West Indies:	
British	122,000
Cuba	1,700,000
Other	194,000
Total	3,402,000
South America	684,000
Europe:	
Spain	16,000
Asia:	
Philippine Islands	145,000
Other	3,115,000
Total	3,260,000
Africa	395,000
Oceania	217,328
Grand Total, Cane Sugar	7,974,328
BEET SUGAR	
North America:	
United States	457,562
Canada	8,802
Total	466,364
Europe:	
Austria-Hungary	1,260,000
Belgium	250,000
France	825,000
Germany	2,040,000
Netherlands	200,000
Russia	1,150,000
Other Countries	400,000
Total	6,125,000
Grand Total, beet sugar	6,591,364
Grand Total, cane and beet sugar	14,565,692

XIII. INTERNATIONAL TRADE IN SUGAR

COUNTRY.	1908
EXPORTS	*Pounds,*
Argentina	40,622
Austria-Hungary	1,766,026,563
Belgium	293,991,033
Brazil	69,616,811
British Guiana	258,076,112
British India	46,355,008
China	75,828,933
Cuba	1,962,240,000
Dutch East Indies	2,475,540,161
Egypt	8,638,977
Formosa	137,148,777
France	540,824,641
Germany	1,842,130,114
Mauritius	434,420,448
Netherlands	339,798,814
Peru	23,402,733
Philippine Islands	319,082,784
Réunion	104,133,257
Russia	623,956,958
Trinidad and Tobago	88,744,320
Other countries	1,039,001,240
Tota	12,448,998,306
IMPORTS	
Argentina	91,654,477
Australia	43,814,064
British India	1,185,089,696
British South Africa	91,486,806
Canada	437,085,696
Chile	105,497,181
China	578,563,200
Denmark	82,653,042
Egypt	117,407,689
Finland	90,250,437
France	254,266,538
Great Britain	3,495,191,616
Italy	10,795,373
Japan	443,138,800
Netherlands	141,159,438
New Zealand	102,663,680
Norway	87,074,147
Persia	191,423,247
Portugal	73,321,446
Singapore	102,563,467
Switzerland	201,421,100
Turkey	302,621,963
United States	3,718,700,796
Uruguay	3,904,846
Other countries	555,225,292
Total	12,506,974,037

XIV. THE WORLD'S COTTON CROP

(*U. S. CENSUS*)

(Bales of 500 lbs.)

Country.	1909.	1908.	1907.
Brazil	360,000	425,000	370,000
British India	3,602,000	2,953,000	2,498,000
China	600,000	600,000	426,000
Egypt	911,000	1,275,000	1,296,000
Mexico	125,000	140,000	70,000
Peru	60,000	57,000	55,000
Persia	90,000	50,000	50,000
Russia	720,000	846,000	620,000
Turkey	32,000	80,000	80,000
United States	9,863,000	13,002,000	10,882,000
Other count.	195,000	185,000	165,000
Total	16,558,000	19,613,000	16,512,000

The United States cotton crop of 1910 is estimated at 10,609,000 bales.

XV. INTERNATIONAL TRADE IN COTTON, 1908

(Bales of 500 pounds, gross)

Exports.	Bales.
Brazil	16,442
British India	1,423,637
China	171,132
Egypt	1,315,968
France	213,791
Germany	248,768
Netherlands	108,262
Persia	89,689
Peru	56,910
United States	9,152,070
Other countries	106,801
Total	12,903,470
Imports.	
Austria-Hungary	816,141
Belgium	226,183
Canada	125,546
France	1,294,295
Germany	2,189,209
Great Britain	3,702,357
Italy	953,538
Japan	890,132
Mexico	7,611
Netherlands	243,184
Russia	1,096,907
Spain	432,687
Sweden	97,755
Switzerland	107,309
United States	154,662
Other countries	308,399
Total	12,645,915

XVI. WORLD'S COTTON SPINDLES AND MILL CONSUMPTION, 1900 AND 1909.

	Cotton Spindles.		Mill Consumption. (Bales).	
	1909.	1900.	1909.	1900.
Brazil	1,000,000	450,000	375,000	85,000
British India	5,800,000	4,945,000	1,661,000	1,162,000
Canada	831,000	550,000	127,000	110,000
Europe:				
Austria-Hungary	4,352,000	3,300,000	795,000	675,000
Belgium	1,231,000	920,000	210,000	170,000
Denmark	78,000	40,000	23,000	15,000
France	7,000,000	5,500,000	970,000	700,000
Germany	10,163,000	8,000,000	1,765,000	1,400,000
Great Britain	53,312,000	45,500,000	3,512,000	3,330,000
Italy	5,000,000	1,940,000	941,000	475,000
Netherlands	425,000	300,000	85,000	70,000
Norway	76,000	35,000	11,000	10,000
Portugal	451,000	230,000	62,000	60,000
Russia	8,076,000	7,500,000	1,514,000	1,350,000
Spain	1,900,000	2,615,000	327,000	400,000
Sweden	450,000	360,000	85,000	85,000
Switzerland	1,497,000	1,550,000	110,000	125,000
Other European countries	220,000	110,000	75,000	50,000
Japan	1,732,000	1,274,000	910,000	700,000
Mexico	750,000	470,000	185,000	125,000
United States:				
Cotton-growing States	10,429,000	4,368,000	2,476,000	1,523,000
All other States	17,589,000	15,104,000	2,723,000	2,350,000
All other countries	215,000	50,000	55,000	15,000
*Total	132,577,000	105,111,000	18,997,000	14,985,000

*Total for 1910, 134,536,430 spindles.

TOBACCO PRODUCTS AND TRADE

XVII. THE WORLD'S TOBACCO CROP

COUNTRY.	1908.
	Pounds
North America:	
United States	718,061,000
Porto Rico	10,000,000
Total United States (except Philippines)	728,061,000
Canada:	
Ontario	3,504,000
Quebec	7,656,000
Other	107,000
Total Canada	11,267,000
Cuba	66,650,000
Guatemala	1,300,000
Mexico	22,750,000
Santo Domingo	16,700,000
Total North America	846,728,000
South America:	
Argentina	31,000,000
Bolivia	3,000,000
Brazil	32,130,000
Chile	8,803,000
Ecuador	122,000
Paraguay	10,000,000
Peru	1,500,000
Total South America	86,555,000
Europe:	
Austria-Hungary:	
Austria	14,630,000
Hungary	135,013,000
Bosnia-Herzegovina	6,396,000
Total Austria-Hungary	156,039,000
Belgium	19,476,000
Bulgaria	9,016,000
Denmark	160,000
France	40,810,000
Germany	74,067,000
Greece	7,700,000
Italy	15,000,000
Netherlands	1,700,000
Roumania	16,099,000
Russia (including Asiatic)	207,948,000
Servia	1,732,000
Sweden	2,300,000
Turkey (including Asiatic)	100,000,000
Total Europe	652,047,000
Asia:	
British India	450,000,000
Dutch East Indies:	
Java	81,221,000
Sumatra	42,541,000
Japanese Empire	100,428,000
Philippine Islands	40,431,000
Total Asia	714,621,000
Africa:	
Algeria	14,177,000
Cape of Good Hope	5,000,000
Natal	3,105,000
Other	1,246,000
Total Africa	23,528,000
Oceania:	
Australia	969,000
Fiji	38,000
Total Oceania	1,007,000
GRAND TOTAL	2,324,486,000

XVIII. INTERNATIONAL TRADE IN UNMANUFACTURED TOBACCO

EXPORTS

COUNTRY.	1908.
	Pounds
Algeria	7,754,758
Austria-Hungary	23,576,669
Brazil	32,130,161
British India	19,006,506
Bulgaria	5,532,100
Ceylon	4,075,120
Cuba	19,135,347
Dutch East Indies	173,306,569
Greece	10,737,453
Mexico	3,884,456
Netherlands	3,751,654
Philippine Islands	24,927,663
Russia	17,225,806
Santo Domingo	16,665,594
Turkey	39,267,984
United States	305,455,871
Other countries	35,952,410
Total	742,386,121

IMPORTS

COUNTRY.	1908.
	Pounds
Argentina	10,500,798
Australia	12,886,746
Austria-Hungary	43,528,057
Belgium	20,927,037
British India	6,607,385
Canada	16,760,080
China	11,234,933
Denmark	19,896,714
Egypt	19,147,819
Finland	9,561,443
France	63,594,945
Germany	170,494,442
Italy	44,893,159
Netherlands	47,965,176
Norway	3,648,473
Portugal	5,160,110
Spain	31,921,214
Sweden	9,165,985
Switzerland	16,721,617
United Kingdom	87,933,057
United States	37,665,211
Other countries	50,846,058
Total	741,060,459

XIX. THE WORLD'S WOOL CLIP

Latest Official Returns and Estimates, 1908

	Pounds
North America:	
United States	328,110,749
British Provinces	11,210,000
Mexico	7,000,000
Central America and West Indies	1,000,000
Total North America	347,320,749
South America:	
Argentina	392,418,800
Brazil	1,130,000
Chile	20,754,000
Peru	9,940,000
Falkland Islands	4,324,000
Uruguay	111,552,760
All other South America reported	5,000,000
Total South America	545,119,560
Europe:	
Austria-Hungary	41,600,000
France	78,000,000
Germany	25,600,000
Spain	52,000,000
Portugal	10,000,000
Great Britain	133,705,074
Greece	14,000,000
Italy	*21,500,000
Russia (Europe)	320,000,000
Turkey and Balkan States	90,500,000
All other Europe	18,000,000
Total Europe	804,905,074
Asia	210,399,000
Africa	139,702,000
Australasia	756,590,163
GRAND TOTAL	2,804,036,546

XX. INTERNATIONAL TRADE IN WOOL

1908

EXPORTS

	Pounds
Algeria	26,624,118
Argentina	386,994,937
Australia	598,032,199
Belgium	40,465,085
British India	32,108,670
British South Africa	122,443,992
Chile	6,928,157
China	33,441,467
France	72,337,175
Great Britain	38,311,090
Netherlands	26,359,444
New Zealand	168,035,607
Peru	8,406,261
Russia	13,939,541
Spain	14,373,068
Turkey	40,156,583
Uruguay	84,129,000
Other countries	77,480,629
Total	1,790,567,023

IMPORTS

Austria-Hungary	60,628,869
Belgium	131,118,370
British India	18,470,491
Canada	4,468,680
France	504,910,496
Germany	430,576,566
Great Britain	470,804,920
Japan	5,551,456
Netherlands	31,714,118
Russia	52,760,801
Sweden	7,168,456
Switzerland	11,097,626
United States	142,559,384
Other countries	49,487,750
Total	1,921,317,983

XXI. THE WORLD'S RAW SILK PRODUCTION

[*Silk Manufacturers' Ass'n, Lyons, France.*]

Country.	1908. Pounds.	
Western Europe:		
Italy	9,890,000	
France	1,446.000	
Spain	166,000	
Austria-Hungary	736,000	
Total		12,238,000
Levant and Central Asia.		5,937,000
Far East:		
China:		
Exports from Shanghai	12,430,000	
Exports from Canton	5,242,000	
Japan:		
Exports from Yokohama	16.689,000	
Exports from Calcutta and Bombay	551,000	
Total		34,912,000
Grand total		53,087,000

Imports into the United States, 1909, 25,187,957 pounds; value, $79,903,586.

XXII. CORN, RYE, BARLEY

CORN—The world's production of corn, as estimated by the Department of Agriculture for 1908, was 3,478,328,000 bushels, of which the United States supplied 2,668,651,000 bushels, of which 39,013,273 bushels were exported; Argentina, 136,057,000 bushels, 67,390,728 bushels exported; and Austria-Hungary, 190,651,000 bushels, and all Europe, 527,450,000 bushels.

RYE—The world's production of rye, 1909, was estimated at 1,736,683,000 bushels, of which the United States supplied 32,239,000 bushels; Germany, 446,767,000 bushels; Austria-Hungary, 162,052,000 bushels; and all Europe, 1,682,791,000 bushels.

BARLEY—The world's production of barley was estimated at 1,477,789,000 bushels, of which the United States supplied 170,284,000 bushels; Canada, 55,398,000; Mexico, 7,000,000 bushels.

XXIII. THE WORLD'S COFFEE CROP

	Pounds.
North America:	
United States:	
Porto Rico	35,256,000
Hawaii	1,442,000
Total United States	36,698,000
Central America	164,489,000
Mexico	42,000,000
West Indies	89,733,000
Total North America	369,618,000
South America:	
Brazil	1,674,428,000
Venezuela	103,454,000
Colombia	79,366,000
Bolivia	1,500,000
Ecuador	8,186,000
Peru	1,102,000
Other	621,000
Total South America	1,868,657,000
Asia:	
Dutch East Indies	56,768,000
Other	50,961,000
Total Asia	107,729,000
Africa:	
Nyasaland Protectorate	1,011,000
German East Africa	1,067,000
Somali Coast	5,933,000
Liberia	2,000,000
Abyssinia	10,000,000
Other	441,000
Total Africa	20,452,000
Oceania	833,000
Grand total	2,367,289,000

XXIV. INTERNATIONAL TRADE IN COFFEE, 1908

EXPORTS

	Pounds.
Brazil	1,674,431,626
British India	37,568,832
Colombia	80,000,000
Costa Rica	19,797,314
Dutch East Indies	53,854,210
Guatemala	63,333,526
Haiti	68,903,525
Jamaica	7,885,136
Mexico	52,591,066
Netherlands	179,444,917
Nicaragua	17,900,000
Salvador	57,589,360
Singapore	6,314,400
United States	34,265,012
Venezuela	103,453,539
Other countries	84,490,571
Total	2,541,823,034

IMPORTS

Argentina	22,085,972
Austria-Hungary	121,781,776
Belgium	134,658,074
British South Africa	25,321,709
Cuba	23,250,910
Denmark	24,017,703
Egypt	21,146,287
Finland	28,549,443
France	226,559,741
Germany	425,332,652
Italy	50,189,763
Netherlands	262,479,471
Norway	27,186,340
Russia	24,917,832
Singapore	7,397,600
Spain	27,358,585
Sweden	66,899,643
Switzerland	24,436,471
United Kingdom	29,195,788
United States	938,559,889
Other countries	94,001,962
Total	2,605,327,611

MINERAL PRODUCTION

XXV. THE MINOR METALS

The Metall Gesellschaft, Frankfort-on-Main

	Metric Tons.			
	1906.	1907.	1908.	1909.
Lead	973,100	986,000	1,061,200	1,081,900
Spelter	702,000	738,400	722,100	783,200
Tin	98,800	97,700	107,500	108,300
Aluminum	14,500	19,800	18,600	24,200
Nickel	14,300	14,100	12,800	16,100
Quicksilver	3,700	3,200	3,300	3,200

I. INTERNATIONAL STATISTICS

XXVI. COAL PRODUCTION OF THE WORLD

British Board of Trade Returns

	1906.	1907.	1908.	1909.
Great Britain.....	251,068,000	267,831,000	261,529,000	263,774,000
Germany.........	134,914,000	140,885,000	145,298,000	146,507,000
France...........	32,920,000	35,411,000	36,044,000	*36,654,000
Belgium..........	23,191,000	23,324,000	23,179,000	*23,182,000
United States.....	369,783,000	428,896,000	371,288,000	*390,336,000

* Provisional figures.

The total production of the world is estimated at 1,068,000,000 tons in 1909.

XXVII. COPPER—WORLD'S PRODUCTION AND CONSUMPTION.

(In tons of 2204.6 lbs.)

The Mineral Industry, by W. R. Ingalls

YEAR.	Production.	Consumption.	Price (*a*).
1905..................	693,900	727,400	15.59 c
1906..................	712,900	727,600	19.28 c
1907..................	703,000	657,300	20.00 c
1908..................	744,600	698,300	13.21 c
1909..................	844,100	782,800	12.96 c

(a) Quotational averages, cents per pound at New York.

XXVIII. PIG IRON PRODUCTION OF THE WORLD

(In metric tons)

The Mineral Industry, by W. R. Ingalls

	1906.	1907.	1908.	1909.
Austria-Hungary..	1,403,500	1,405,000	1,650,000	1,958,786
Belgium..........	1,431,160	1,427,940	1,206,440	1,632,350
Canada...........	550,618	590,444	572,123	687,923
France...........	3,319,032	3,588,949	3,391,150	3,632,105
Germany.........	12,478,067	13,045,760	11,813,511	12,917,653
Italy.............	30,450	32,000	112,924	207,800
Russia............	2,350,000	2,768,220	2,748,000	2,871,332
Spain............	387,500	385,000	403,500	389,000
Sweden..........	552,250	603,100	563,300	443,000
United Kingdom...	10,311,778	10,082,638	9,438,477	9,818,916
United States.....	25,706,882	26,193,863	16,190,994	26,108,199
All other countries.	650,000	556,900	550,000	550,000
Total...........	59,171,237	60,679,814	48,640,419	61,217,064

XXIX. STEEL PRODUCTION OF THE WORLD

(In metric tons)

The Mineral Industry, by W. R. Ingalls

	1906.	1907.	1908.	1909.
Austria-Hungary..	1,195,000	1,195,500	2,025,182	1,969,538
Belgium..........	1,185,660	1,183,500	1,065,500	1,370,000
Canada...........	515,200	516,300	598,183	766,795
France...........	2,371,377	2,667,805	2,727,717	3,034,571
Germany..........	11,135,085	12,063,632	10,480,349	12,049,834
Italy............	109,000	115,000	537,000	661,600
Russia...........	1,763,000	2,076,000	2,341,000	2,471,000
Spain............	251,600	247,100	239,500	227,000
Sweden...........	351,900	443,000	427,100	310,600
United Kingdom...	6,565,670	6,627,112	5,380,372	5,975,734
United States....	23,772,506	23,733,391	14,247,619	24,338,302
All other countries.	420,000	405,000	300,000	325,000
Total..........	49,635,998	51,273,340	40,369,522	53,499,974

XXX. THE WORLD'S PRODUCTION OF GOLD AND SILVER.—1909

Report of the Director of the Mint

	GOLD.		SILVER.	
	Fine Ounces.	Value.	Fine Ounces.	Value.
North America....	6,449,264	$133,306,300	156,542,522	$80,619,398
Africa...........	8,272,307	170,988,600	1,076,577	554,437
Australasia.......	3,435,312	71,007,900	16,359,284	8,425,031
Europe..........	1,731,436	35,788,800	14,160,424	7,292,618
South America....	543,478	11,233,700	16,038,182	8,259,663
Central America..	127,242	2,630,100	2,294,272	1,181,550
Asia.............	1,425,616	29,467,500	4,744,372	2,443,351
Total..........	21,984,655	$454,422,900	211,215,633	$108,776,048

Note by the Director of the Mint:—Australasia which has been on a declining scale in the production of gold since 1903, when its output was officially estimated at $89,210,100, falls to $71,007,900 in the final estimate for 1909, and to $65,602,600 in the preliminary estimate for 1910. As a result of this loss and the falling off in the United States, together with the fact that South Africa has not maintained the rate of increase of recent years, the world's production in 1910 was but slightly, if any, greater than in 1909. Present conditions in the principal gold mining countries do not promise an increase in production at the rate of the last decade. When the natural expansion of industry, commerce and wealth is considered, all fears of an embarrassing supply of gold may be dismissed.

The offices of the United States Mint service sold in 1910, $38,474,398.76 worth of gold bars for use in the industrial arts, which compares with $34,486,063, the next highest record in 1907. The amount of new gold used in the arts in the United States in 1910, including coin, was over $40,000,000.

XXXI. COINAGE OF GOLD AND SILVER OF THE MINTS OF THE WORLD

Report of the Director of the Mint

YEAR.	GOLD.		SILVER.	
	Fine Ounces.	Value.	Fine Ounces.	Coining Value.
1880.............	7,242,951	$149,725,081	65,442,074	$84,611,974
1890.............	7,219,725	149,244,965	117,789,228	152,293,144
1900.............	17,170,053	354,936,497	143,362,948	185,358,156
1907.............	19,921,014	411,803,902	171,434,608	221,652,826
1908.............	15,819,505	327,018,200	150,582,664	194,692,737
1909.............	15,163,201	313,451,185	89,040,322	115,122,841

XXXII. ANNUAL CRUDE BIRTH RATES PER 1,000, 1881–1908

[*Registrar General's Report, England, 1908*]

COUNTRIES (Arranged in Order of Rates in 1901–05).	Quinquennial Periods.					Years.			Decrease per cent. between 1881–85 and 1901–05.
	1881–85.	1886–90.	1891–95.	1896–1900.	1901–05.	1906.	1907.	1908.	
Russia (European)	49.1	48.2	48.2	49.3	......	......	......	......	....
Bulgaria	37.2	35.9	37.5	41.0	40.6	44.0	43.6	......	+9.1
Roumania	41.8	40.9	41.0	40.2	39.4	40.5	41.7	40.8	5.7
Jamaica	......	36.8	38.6	38.9	39.0	38.1	35.0	37.6	....
Ceylon	......	30.3	31.7	37.2	38.8	35.7	32.8	40.1	....
Servia	46.3	43.7	43.3	40.1	38.7	41.3	40.0	36.8	16.4
Hungary	44.6	43.7	41.7	39.4	37.2	36.0	36.0	36.3	16.6
Chile	39.1	35.5	37.0	35.0	36.1	36.6	38.6	39.3	7.7
Austria	38.2	37.8	37.4	37.3	35.6	34.9	33.8	......	6.8
Spain	36.4	36.0	35.3	34.3	35.0	33.4	32.9	33.2	3.8
Prussia	37.4	37.3	37.0	36.5	34.8	33.7	33.0	32.8	7.0
German Empire	37.0	36.5	36.3	36.0	34.3	33.1	32.3	......	7.3
Italy	38.0	37.5	36.0	34.0	32.6	31.9	31.5	33.4	14.2
Japan	......	28.5	28.6	31.1	31.7	28.9	33.0	......	....
The Netherlands	34.8	33.6	32.9	32.1	31.5	30.4	30.0	29.7	9.5
Finland	35.5	34.5	31.8	32.6	31.3	31.4	31.3	......	11.8
Western Australia	34.5	36.9	30.7	28.3	30.3	30.0	29.2	28.9	12.2
Denmark	32.4	31.4	30.4	30.0	29.0	28.5	28.3	28.3	10.5
Tasmania	35.0	34.1	32.7	28.2	29.0	29.5	29.6	30.8	17.1
Scotland	33.3	31.4	30.5	30.0	28.9	27.9	27.0	27.2	13.2
Norway	31.2	30.8	30.2	30.1	28.6	26.7	26.3	26.2	8.3
England and Wales	33.5	31.4	30.5	29.3	28.1	27.1	26.3	26.5	16.1
Switzerland	28.6	27.5	27.7	28.5	28.1	27.4	26.8	......	1.7
Belgium	30.7	29.3	28.9	28.9	27.7	25.7	25.3	......	9.8
New South Wales	37.7	36.4	32.9	28.0	26.7	27.0	27.1	26.8	29.2
Queensland	36.5	37.4	34.1	29.1	26.7	26.3	26.9	26.7	26.8
New Zealand	36.3	31.2	27.7	25.7	26.6	27.1	27.3	27.4	26.7
Sweden	29.4	28.8	27.4	26.9	26.1	25.7	25.5	25.7	11.2
Victoria	30.8	32.7	30.9	26.2	25.0	25.1	25.2	24.6	18.8
South Australia	38.5	34.7	32.0	27.0	24.5	23.7	23.9	24.7	36.4
Ireland	23.9	22.8	23.0	23.3	23.2	23.6	23.2	23.3	2.9
Ontario, Province of	22.4	22.0	19.9	20.1	21.8	23.3	......	......	2.7
France	24.7	23.1	22.3	21.9	21.2	20.6	19.7	20.2	14.2

XXXIII. LEGITIMATE BIRTH RATES

[*Registrar General's Report, England, 1908*]

COUNTRIES Arranged in Order of Rates in 1900–02).	Proportion of Legitimate Births per 1,000 Wives Aged 15–44 Years. Approximate Periods.			Increase (+) or Decrease (–) per cent in Fertility During 20 Years
	1880–82.	1890–92.	1900–02.	
EUROPEAN COUNTRIES.				
Holland	347.5	338.8	314.6	– 9.5
Norway	314.5	306.8	302.8	– 3.7
Prussia	312.6	307.6	290.4	– 7.1
Ireland	282.9	287.6	289.4	+ 2.3
German Empire	310.2	300.9	284.2	– 8.4
Austria	281.4	292.4	283.7	+ 0.8
Scotland	311.5	296.4	271.8	–12.7
Italy	276.2	?	269.4	– 2.5
Sweden	293.0	280.0	269.0	– 8.2
Switzerland	284.1	274.0	265.9	– 6.4
Denmark	287.1	278.1	259.1	– 9.8
Spain	257.7	263.9	258.7	+ 0.4
Belgium	312.7	285.1	250.7	–19.8
England and Wales	286.0	263.8	235.5	–17.7
France	196.2	173.5	157.5	–19.7

I. INTERNATIONAL STATISTICS

XXXIV. ANNUAL CRUDE DEATH RATES PER 1,000, 1881–1908.

Countries—Dept. I.

[Registrar General's Report, England, 1908]

Countries (Arranged in Order of Rates in 1901–05).	Quinquennial Periods.					Years.			Dec. % 1881–85 to 1901–05.
	1881–85.	1886–90.	1891–95.	1896–1900.	1901–05.	1906.	1907.	1908.	
Russia (European)	35.4	33.2	35.8	31.9	......	......	......	......	....
Chile	27.8	35.2	32.6	28.8	30.0	32.9	29.6	31.6	+ 7.9
Ceylon	......	25.1	28.3	27.0	26.7	34.3	30.1	29.4	....
Hungary	33.1	32.1	31.8	27.9	26.2	24.8	25.2	24.8	20.8
Spain	32.6	30.9	30.1	28.8	25.8	25.6	24.0	23.3	20.9
Austria	30.1	28.9	27.9	25.6	24.2	22.4	22.6	......	19.6
Bulgaria	17.7	18.9	27.8	23.9	22.5	22.3	22.3	......	+27.1
Servia	24.5	25.9	28.9	24.8	22.4	24.0	22.8	23.7	8.6
Italy	27.3	27.2	25.5	22.9	21.9	20.8	20.7	*22.6	19.8
Japan	......	20.6	21.1	20.7	20.9	19.8	20.9	......	....
German Empire	25.3	24.4	23.3	21.2	19.9	18.2	18.0	......	21.3
France	22.2	22.0	22.3	20.7	19.6	19.9	20.2	19.0	11.7
Prussia	25.4	24.0	22.8	21.0	19.6	17.9	17.8	17.9	22.8
Switzerland	21.3	20.4	19.8	18.1	17.7	17.0	16.8	......	16.9
Belgium	20.6	20.2	20.1	18.1	17.0	16.4	15.7	......	17.5
Scotland	19.6	18.8	19.0	18.0	16.9	16.0	16.2	16.1	13.8
England and Wales	19.4	18.9	18.7	17.7	16.0	15.4	15.0	14.7	17.5
Holland	21.4	20.5	19.6	17.2	16.0	14.8	14.6	15.3	25.2
Sweden	17.5	16.4	16.6	16.1	15.5	14.4	14.6	14.9	11.4
Denmark	18.4	18.7	18.6	16.4	14.8	13.5	14.2	14.5	19.6
Norway	17.2	17.0	16.8	15.6	14.5	13.6	14.2	14.3	15.7
Ontario, Province of	11.4	11.0	10.6	11.6	13.0	14.8	......	......	+14.0
Victoria	14.7	16.1	14.0	13.7	12.7	12.4	11.7	12.5	13.6
New South Wales	15.7	13.8	12.8	11.9	11.2	9.9	10.6	10.1	28.7
South Australia	14.7	12.6	12.3	12.0	10.8	10.3	9.7	9.7	26.5
Tasmania	16.0	14.9	13.3	12.4	10.8	11.2	11.2	11.7	32.5
New Zealand	10.9	9.9	10.1	9.6	9.9	9.3	10.9	9.5	9.2

XXXV. ANNUAL CRUDE DEATH RATES PER 1,000 PERSONS LIVING—Cities

[From Registrar General's Annual Summary, England, 1909]

Cities.	1881–1885.	1886–1890.	1891–1895.	1896–1900.	1901–1905.	1906.	1907.	1908.	1909.	Dec. % 1881–85 to 1901–05.
London	20.9	19.7	19.8	18.5	16.1	15.1	14.6	13.8	14.0	23.0
Edinburgh	19.6	19.7	19.7	19.0	17.3	16.0	16.2	15.2	15.3	11.7
Glasgow	26.0	23.1	22.8	21.2	19.5	17.8	18.5	17.7	17.5	25.0
Dublin (City)	30.6	29.5	28.8	28.9	24.9	24.1	24.7	23.0	22.4	18.6
Belfast	24.7	24.4	25.1	23.4	20.8	20.1	21.3	19.5	18.2	15.8
Melbourne	20.1	21.0	16.7	15.5	14.0	13.6	12.8	13.8	12.5	30.3
Sydney	20.8	17.9	14.3	12.1	11.5	10.5	11.0	10.3	10.3	44.7
Montreal	31.0	26.7	25.3	23.1	23.3	22.9	22.6	23.0	?	24.8
Toronto	20.7	20.1	15.2	14.6	16.3	17.2	20.2	20.1	22.3	21.3
Paris	24.4	23.0	21.1	19.2	18.0	17.6	18.5	17.5	17.4	26.2
Brussels	23.4	21.2	20.2	17.2	15.2	14.6	13.7	14.5	13.9	35.0
Amsterdam	25.1	22.4	19.2	16.7	14.7	13.7	13.4	13.0	13.1	41.4
Rotterdam	24.2	22.0	20.8	18.0	15.6	13.9	14.3	13.7	12.6	35.5
The Hague	23.3	20.8	18.7	16.2	14.4	14.0	13.4	13.8	12.7	38.2
Copenhagen	22.3	22.3	20.2	17.6	16.1	15.4	15.2	16.4	14.5	27.8
St. Petersburg	32.8	26.8	25.3	24.6	23.5	25.0	24.7	28.6	24.6	28.4
Moscow	33.3	33.6	29.2	28.7	26.6	25.7	27.5	28.0	29.6	20.1
Berlin	26.5	22.4	20.5	18.1	17.0	15.8	15.4	15.4	15.1	35.8
Hamburg	25.2	25.3	24.2	17.3	16.3	15.3	14.8	15.3	14.6	35.3
Munich	30.4	28.3	25.8	23.9	21.0	18.0	18.1	17.9	17.6	30.9
Vienna	28.2	25.1	24.1	21.1	19.1	17.5	17.3	17.6	16.8	32.3
Budapest	31.5	30.8	25.5	21.6	19.8	19.1	20.2	19.3	19.2	37.1
Rome	*26.8	25.9	21.4	18.1	*19.8	18.7	18.2	18.5	19.3	26.1
Milan	30.3	30.4	27.4	23.2	22.1	21.6	20.3	18.4	20.3	27.1
Turin	27.2	23.5	21.6	19.8	19.6	19.2	19.3	18.7	15.4	27.9
Venice	*28.3	28.0	25.1	22.8	22.2	?	19.7	22.0	22.1	21.6
New York	27.5	25.8	24.6	20.3	18.9	18.3	18.5	16.5	16.2	31.3
Chicago	21.5	19.5	20.6	15.2	14.2	14.2	15.3	14.1	14.1	34.0
Philadelphia	22.3	20.6	21.1	19.2	18.1	18.6	18.3	17.2	15.8	18.8
Boston	24.9	23.5	23.6	20.9	18.8	18.9	19.2	19.1	17.7	24.5
Rio de Janeiro	30.5	33.1	38.2	29.2	27.9	22.3	20.8	31.8	19.5	8.5

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* Average for four years.

XXXVI. NATURAL INCREASE OF POPULATION—MEAN ANNUAL RATES OF INCREASE BY EXCESS OF BIRTHS OVER DEATHS, PER 1,000 LIVING, 1881–1908

[*Registrar General's Report, England, 1908*]

COUNTRIES (Arranged in Order of Rates in 1901–05).	Quinquennial Periods.					Years.			Decrease per cent Between 1881–85 and 1901–05.
	1881–85.	1886–90.	1891–95.	1896–1900.	1901–05.	1906.	1907.	1908.	
Tasmania	19.0	19.2	19.4	15.8	18.2	18.3	18.4	19.1	4.2
Bulgaria	19.5	17.0	9.7	17.1	18.1	21.7	21.3	......	7.2
Western Australia	17.4	20.9	14.4	13.2	17.9	18.2	18.1	18.2	+2.9
Russia (European)	13.7	15.0	12.4	17.4	......	......	......	......	....
New Zealand	25.4	21.3	17.6	16.1	16.7	17.8	16.4	17.9	34.3
Servia	21.8	17.8	14.4	15.3	16.3	17.3	17.2	13.1	25.2
New South Wales	22.0	22.6	20.1	16.1	15.5	17.1	16.5	16.7	29.5
Holland	13.4	13.1	13.3	14.9	15.5	15.6	15.4	14.4	+15.7
Queensland	17.3	22.5	21.7	17.1	15.3	16.7	16.5	16.5	11.6
Prussia	12.0	13.3	14.2	15.5	15.2	15.8	15.2	14.9	+26.7
German Empire	11.7	12.1	13.0	14.8	14.4	14.9	14.3	......	+23.1
Denmark	14.0	12.7	11.8	13.6	14.2	15.0	14.1	13.8	+ 1.4
Norway	14.0	13.8	13.4	14.5	14.1	13.1	12.1	11.9	+ 0.7
Roumania	15.6	12.2	10.0	12.8	13.9	16.2	15.0	13.1	10.9
South Australia	23.8	22.1	19.7	15.0	13.7	13.4	14.2	15.0	42.4
Finland	13.3	14.5	11.3	13.6	12.7	13.9	13.4	......	4.5
Victoria	16.1	16.6	16.9	12.5	12.3	12.7	13.5	12.1	23.6
England and Wales	14.1	12.5	11.8	11.6	12.1	11.7	11.3	11.8	14.2
Scotland	13.7	12.6	11.5	12.0	12.0	11.9	10.8	11.1	12.4
Austria	8.1	8.9	9.5	11.7	11.4	12.5	11.2	......	+40.7
Hungary	11.5	11.6	9.9	11.5	11.0	11.2	10.8	11.5	4.3
Japan	......	7.9	7.5	10.4	10.8	9.1	12.1	......	....
Belgium	10.1	9.1	8.8	10.8	10.7	9.3	9.6	......	+ 5.9
Italy	10.7	10.3	10.5	11.1	10.7	11.1	10.8	10.8	....
Sweden	11.9	12.4	10.8	10.8	10.6	11.3	10.9	10.8	10.9
Switzerland	7.3	7.1	7.9	10.4	10.4	10.4	10.0	......	+42.5
Spain	3.8	5.1	5.2	5.5	9.2	7.8	8.9	9.9	+142.1
Ontario, Province of	11.0	11.0	9.3	8.5	8.8	8.5	......	......	20.0
Chile	11.3	0.3	4.4	6.2	6.1	3.7	9.0	7.7	46.0
Ireland	5.9	4.9	4.5	5.2	5.6	6.6	5.5	5.7	5.1
France	2.5	1.1	......	1.2	1.6	0.7	0.5	1.2	36.0

XXXVII. THE WORLD'S MERCHANT MARINE

[*Compiled from Lloyd's Register*]

STEAM TONNAGE (100 TONS GROSS AND UPWARDS) AND NUMBER OF VESSELS OF THE PRINCIPAL MARITIME COUNTRIES

FLAG.	1890.		1900.		1910.	
	No.	Gross Tons.	No.	Gross Tons.	No.	Gross Tons.
American:						
Sea	416	517,394	690	878,564	1,073	1,641,919
Lakes	......	....	242	576,402	563	2,146,769
Austro-Hungarian	130	151,166	214	387,471	365	777,729
British	6,403	8,235,854	7,930	12,149,090	9,837	18,059,037
Danish	217	159,072	369	412,273	553	671,828
Dutch	162	217,022	289	467,209	532	983,049
French	526	809,598	662	1,052,193	875	1,448,172
German	741	928,911	1,209	2,159,919	1,822	3,959,318
Italian	212	300,625	312	540,349	450	987,559
Japanese	165	138,431	484	488,187	846	1,146,977
Norwegian	395	246,669	806	764,683	1,312	1,422,006
Spanish	389	414,817	422	642,231	511	746,748
Swedish	471	181,781	678	418,550	964	782,508
Other countries	881	684,032	1,591	1,432,237	2,305	2,516,076
Total	11,108	12,985,372	15,898	22,369,358	22,008	37,289,695

The sail tonnage of the world has decreased from 21,190 vessels of 9,166,279 net tons in 1890 to 8,050 vessels of 4,624,070 net tons in 1910.

II. NATIONAL STATISTICS

I. POPULATION CLASSIFIED BY SEX, BY RACE, AND BY NATIVITY, 1900, 1890

[*Twelfth Census*]

SEX, RACE, OR NATIVITY.	POPULATION.			PER CENT OF POPULATION.		PER CENT OF INCREASE.
	1900.	1890.	1880.	1900.	1890.	1890 to 1900.
Total	75,994,575	62,947,714	50,155,783	100.0	100.0	20.7
Male	38,816,448	32,237,101	25,518,820	51.1	51.2	20.4
Female	37,178,127	30,710,613	24,636,963	48.9	48.8	21.1
White	66,809,196	55,101,258	43,402,970	87.9	87.5	21.2
Negro	8,833,994	7,488,676	6,580,793	11.6	11.9	18.0
Indian	237,196	248,253	66,407	0.3	0.4	4.5
Mongolian	114,189	109,527	105,613	0.2	0.2	4.3
Chinese	89,863	107,488	105,465	0.1	0.2	16.4
Japanese	24,326	2,039	148	......	......	1,093.0
Native	65,653,299	53,698,154	43,475,840	86.4	85.3	22.3
Foreign born	10,341,276	9,249,560	6,679,943	13.6	14.7	11.8

The population of 1910 is given by states on page 182.

II. POPULATION CLASSIFIED BY RACE AND NATIVITY OF PARENTS, 1900, 1890

RACE OR NATIVITY.	Year.	Total.	POPULATION HAVING PARENTS			PER CENT HAVING PARENTS		
			Both Native.	Both Foreign Born.	One Native and One Foreign Born.	Both Native.	Both Foreign Born.	One Native and One Foreign Born.
Total	1900	75,994,575	49,965,636	20,919,887	5,109,052	65.8	27.5	6.7
	1890	62,947,714	42,271,655			67.2	......	......
White	1900	66,809,196	40,958,216	20,775,887	5,075,093	61.3	31.1	7.6
	1890	55,101,258	34,581,615	17,011,781	3,507,862	62.7	30.9	6.4
Native	1900	56,595,379	40,949,362	10,632,280	5,013,737	72.3	18.8	8.9
	1890	45,979,391	34,475,716	8,085,019	3,418,656	75.0	17.6	7.4
Foreign born	1900	10,213,817	8,854	10,143,607	61,356	0.1	99.3	0.6
	1890	9,121,867	105,899	8,926,762	89,206	1.1	97.9	1.0
Negro, Indian, and Mongolian	1900	9,185,379	9,007,420	144,000	33,959	98.0	1.6	0.4
	1890	7,846,456	7,690,040			98.0	......	......

III. OCCUPATIONS

KIND OF OCCUPATION.	POPULATION ENGAGED IN GAINFUL OCCUPATIONS.					
	Number.			Per Cent of Total.		
	Total.	Male.	Female.	Total.	Male.	Female.
1900. All occupations	29,073,233	23,753,836	5,319,397	100.0	100.0	100.0
Agricultural pursuits	10,381,765	9,404,429	977,336	35.7	39.6	18.4
Professional service	1,258,538	827,941	430,597	4.3	3.5	8.1
Domestic and personal service	5,580,657	3,485,208	2,095,449	19.2	14.7	39.4
Trade and transportation	4,766,964	4,263,617	503,347	16.4	17.9	9.4
Manufacturing and mechanical pursuits	7,085,309	5,772,641	1,312,668	24.4	24.3	24.7

IV. FOREIGN BORN POPULATION BY COUNTRIES OF BIRTH—1850 TO 1900

[Twelfth Census]

Country of Birth.	1900.	1890.	1880.	1870.	1860.	1850.
Total	10,341,276	9,249,547	6,679,943	5,567,229	4,138,697	2,244,602
Austria	275,907	123,271	38,663	30,508	25,061	946
Bohemia	156,891	118,106	85,361	40,289	...	...
Canada (English)	784,741	678,442	717,157	493,464	249,970	147,711
Canada (French)	395,066	302,496				
China	81,534	106,688	104,468	63,042	35,565	758
Denmark	153,805	132,543	64,196	30,107	9,962	1,838
England	840,513	909,092	664,160	555,046	433,494	278,675
France	104,197	113,174	106,971	116,402	109,870	54,069
Germany	2,663,418	2,784,894	1,966,742	1,690,533	1,276,075	583,774
Holland	104,931	81,828	58,090	46,802	28,281	9,848
Hungary	145,714	62,435	11,526	3,737	...	...
Ireland	1,615,459	1,871,509	1,854,571	1,855,827	1,611,304	961,719
Italy	484,027	182,580	44,230	17,157	10,518	3,645
Mexico	103,393	77,853	68,399	42,435	27,466	13,317
Norway	336,388	322,665	181,729	114,246	43,995	12,678
Poland	383,407	147,440	48,557	14,436	7,298	...
Russia	423,726	182,644	35,722	4,644	3,160	1,414
Scotland	233,524	242,231	170,136	140,835	108,518	70,550
Sweden	572,014	478,041	194,337	97,332	18,625	3,559
Switzerland	115,593	104,069	88,621	75,153	53,327	13,358
Wales	93,586	100,079	83,302	74,533	45,763	29,868
Other countries	273,442	127,467	93,005	60,701	40,445	56,875

V. INDIAN POPULATION AND RESERVATIONS

From Report of Indian Commissioner

	Population.	Reservations.		
		No.	Unallotted Sq. Miles.	Allotted Sq. Miles.
Arizona	37,209	12	30,554.01	182.03
California	19,788	33	678.71	56.62
Colorado	806	1	755.85	113.76
Florida	358	...	...	...
Idaho	4,073	4	799.90	291.47
Indiana	243	...	...	...
Iowa	352	1	4.63	...
Kansas	1,351	5	1.44	186.12
Maine	410	...	...	...
Michigan	6,743	3	5.31	234.72
Minnesota	10,008	11	1,068.43	1,302.42
Montana	10,533	6	8,685.10	1,079.69
Nebraska	3,744	5	23.08	522.65
Nevada	5,870	4	992.68	15.28
New Mexico	18,627	22	2,655.44	...
New York	5,460	8	136.99	...
North Carolina	1,896	1	98.76	...
North Dakota	8,071	4	4,413.65	1,698.25
Oklahoma	117,370	25	8,530.98	30,124.09
Oregon	3,669	5	1,995.80	744.08
South Carolina	60	...	...	...
South Dakota	20,171	7	9,722.56	5,376.22
Texas	470	...	...	...
Utah	1,777	2	279.99	180.94
Washington	8,796	20	3,668.71	707.39
Wisconsin	11,020	7	525.53	414.77
Wyoming	1,670	1	148.91	342.22
On public domain	1	...	...	717.36
Total	300,545	187	75,746.46	44,290.08

VI. NUMBER AND ACREAGE OF FARMS, IMPROVED AND UNIMPROVED, 1850–1900

[*Twelfth Census*]

YEAR.	Number of Farms.	NUMBER OF ACRES IN FARMS.		
		Total.	Improved.	Unimproved.
1900...........	5,737,372	838,591,774	414,498,487	424,093,287
1890...........	4,564,641	623,218,619	357,616,755	265,601,864
1880...........	4,008,907	536,081,835	284,771,042	251,310,793
1870...........	2,659,985	407,735,041	188,921,099	218,813,942
1860...........	2,044,077	407,212,538	163,110,720	244,101,818
1850...........	1,449,073	293,560,614	113,032,614	180,528,000

VII. VALUE OF FARM PROPERTY, 1850–1900

[*Twelfth Census*]

YEAR.	VALUE OF—			
	All Farm Property.	Farm Land, with Improvements, Including Buildings.	Implements and Machinery.	Live Stock.
1900............	$20,439,901,164	$16,614,647,491	$749,775,970	$3,075,477,703
1890............	16,082,267,689	13,279,252,649	494,247,467	2,308,767,573
1880............	12,180,501,538	10,197,096,776	406,520,055	1,576,884,707
1870............	11,124,958,747	9,262,803,861	336,878,429	1,525,276,457
1860............	7,980,493,063	6,645,045,007	246,118,141	1,089,329,915
1850............	3,967,343,580	3,271,575,426	151,587,638	544,180,516

VIII. ACREAGE OF FARM CROPS, 1900, 1890 AND 1880

[*Twelfth Census*]

CROP PRODUCTION.	Unit of Measure.	1900.	NUMBER OF ACRES.		
			1900.	1890.	1880.
Corn..................	Bushel.	2,666,324,370	94,913,673	72,087,752	62,368,504
Wheat.................	"	658,534,252	52,588,574	33,579,514	35,430,333
Oats..................	"	943,389,375	29,539,698	28,320,677	16,144,593
Barley................	"	119,634,877	4,470,196	3,220,834	1,997,727
Rye...................	"	25,568,625	2,054,292	2,171,604	1,842,233
Buckwheat.............	"	11,233,515	807,060	837,164	848,389
Rice..................	Pound.	250,280,227	342,214	161,312	174,173
Flaxseed..............	Bushel.	19,979,492	2,110,517	1,318,698	....
Hay and forage........	Ton.	79,251,562	61,691,069	52,948,797	30,631,054
Cotton................	Bale.	9,534,707	24,275,101	20,175,270	14,480,019
Tobacco...............	Pound.	868,112,865	1,101,460	695,301	638,841
Hemp..................	"	11,750,630	16,042	25,054	....
Beans.................	Bushel.	5,064,490	453,841	....	....
Pease.................	"	9,440,210	968,370	....	....
Potatoes..............	"	273,318,167	2,938,778	2,600,750	911,325
Sweet Potatoes........	"	42,517,412	537,312	524,588	444,817

NOTE.—The agricultural census of 1910, not yet completed, will show that, whereas the present value of all farm property in the United States is approximately $50,000,000,000, compared with a little more than $20,000,000,000 in 1900, the total acreage has declined. The total value of farm land, buildings and implements has increased enormously compared with values disclosed in the census of 1900. The wages paid for farm labor are said to show a general increase of about 50 per cent.

IX. WHEAT—1870–1910

Estimates of Department of Agriculture

Year.	Acreage Harvested.	Production.	Average Farm Price per Bushel, Dec. 1st.	Farm Value, Dec. 1st.	Domestic Exports, Including Flour.	Per Cent Exported.
	Acres.	Bushels.	Cents.	Dollars.	Bushels.	Per cent.
1870	18,993,000	235,885,000	94.4	222,767,000	52,574,111	22.3
1880	37,987,000	498,550,000	95.1	474,202,000	186,321,514	37.4
1890	36,087,000	399,262,000	83.8	334,774,000	106,181,316	26.6
1900	42,495,000	522,230,000	61.9	323,515,000	215,990,073	41.4
1905	47,854,000	692,979,000	74.8	518,373,000	97,609,007	14.1
1906	47,306,000	735,261,000	66.7	490,333,000	146,700,425	20.0
1907	45,211,000	634,087,000	87.4	554,437,000	163,043,669	25.7
1908	47,557,000	664,602,000	92.8	616,826,000	114,268,468	17.2
1909	46,723,000	737,189,000	99.0	730,046,000	...	...
1910	...	691,767,000	...	625,000,000	...	...

X. CORN, 1870–1910

Year.	Acreage.	Production.	Farm Price per Bushel, Dec. 1st.	Farm Value, Dec. 1st.	Domestic Exports.	Per Cent of Crop Exported.
	Acres.	Bushels.	Cents.	Dollars.	Bushels.	Per cent.
1870	38,647,000	1,094,255,000	49.4	540,520,000	10,673,553	1.0
1880	62,318,000	1,717,435,000	39.6	679,714,000	93,648,147	5.5
1890	71,971,000	1,489,970,000	50.6	754,433,000	32,041,529	2.2
1900	83,321,000	2,105,103,000	35.7	751,220,000	181,405,473	8.6
1905	94,011,000	2,707,994,000	41.2	1,116,697,000	119,893,833	4.4
1906	96,738,000	2,927,416,000	39.9	1,166,626,000	86,368,228	3.0
1907	99,931,000	2,592,320,000	51.6	1,336,901,000	55,063,860	2.1
1908	101,788,000	2,668,651,000	60.6	1,616,145,000	37,665,040	1.4
1909	108,771,000	2,772,376,000	59.6	1,652,822,000	...	...
1910	...	3,121,381,000	...	1,500,000,000	...	...

XI. RICE, 1909, 1910

State.	Acreage.	Average Yield per Acre.	Production.	Average Farm Price, Dec. 1st.	Farm Value, Dec. 1st.
1909.	Acres.	Bushels.	Bushels.	Cents.	Dollars.
Alabama	1,000	33.0	35,000	80	28,000
Arkansas	28,000	40.0	1,120,000	90	1,008,000
Florida	1,000	25.0	25,000	80	20,000
Georgia	4,200	23.9	100,000	87	87,000
Louisiana	375,000	33.8	12,675,000	79	10,013,000
Mississippi	1,000	30.0	30,000	80	24,000
North Carolina	425	30.2	13,000	85	11,000
South Carolina	18,600	25.6	476,000	91	433,000
Texas	291,000	34.0	9,894,000	78	7,717,000
	720,225	33.8	24,368,000	79.4	19,341,000
1910*	...	...	1,000,000,000	...	16.000,000

* Figures are from the Annual Report of the Secretary of Agriculture.

XII. OATS, 1870–1910

Year.	Acreage.	Production (Bushels).	Average Production per Bushel.	Farm Value.	Domestic Exports.
1870	8,792,000	247,277,000	39.0	96,444,000	147,572
1880	16,188,000	417,885,000	36.0	150,244,000	402,904
1890	26,431,000	523,621,000	42.4	222,048,000	1,382,836
1900	27,365,000	809,126,000	25.8	208,669,000	42,268,931
1906	30,959,000	964,905,000	31.7	306,293,000	6,386,334
1907	31,837,000	754,443,000	44.3	334,568,000	2,518,855
1908	32,344,000	807,156,000	47.2	381,171,000	2,333,817
1909	33,204,000	1,007,353,000	40.5	408,174,000	...
1910	...	1,096,396,000	...	380,000,000	...

II. NATIONAL STATISTICS

XIII. RYE

YEAR.	Acreage.	Production.	Average Production per Bushel.	Farm Value.	Domestic Exports.
		Bushels.			Bushels.
1870	1,176,000	15,474,000	73.2	$11,327,000	87,174
1880	1,768,000	24,541,000	75.6	18,565,000	1,955,155
1890	2,142,000	25,807,000	62.9	16,230,000	358,263
1900	1,591,000	23,996,000	51.2	12,295,000	2,345,512
1906	2,002,000	33,375,000	58.9	19,671,000	769,717
1907	1,926,000	31,566,000	73.1	23,068,000	2,444,588
1908	1,948,000	31,851,000	73.6	23,455,000	1,295,692
1909	2,006,000	32,239,000	73.9	23,809,000	....
1910	....	32,088,000	....	23,000,000	....

XIV. BARLEY

YEAR.	Acreage.	Production.	Average Production per Bushel.	Farm Value.	Domestic Exports.	Imports.
	Acres.	Bushels.			Bushels.	
1870	1,109,000	26,295,000	79.1	$20,792,000	340,093	4,866,700
1880	1,843,000	45,165,000	66.6	30,091,000	885,246	9,528,616
1890	3,135,000	67,168,000	62.7	42,141,000	973,062	5,078,733
1900	2,894,000	58,926,000	40.9	24,075,000	6,293,207	171,004
1906	6,324,000	178,916,000	41.5	74,236,000	8,238,842	38,319
1907	6,448,000	153,597,000	66.6	102,290,000	4,349,078	199,741
1908	6,646,000	166,756,000	55.4	92,442,000	6,580,393	2,644
1909	7,011,000	170,284,000	55.2	93,971,000	....	....
1910	....	158,138,000	....	....	....	....

XV. TOBACCO, 1909

STATE.	Acreage.	Production.	Farm Value.
	Acres.	Pounds.	Dollars.
Alabama	600	360,000	104,400
Arkansas	900	540,000	81,000
Connecticut	13,400	22,110,000	3,648,150
Florida	4,500	3,195,000	1,086,300
Georgia	2,100	1,470,000	499,800
Illinois	1,500	1,125,000	123,750
Indiana	20,000	19,000,000	2,090,000
Kentucky	420,000	350,700,000	37,174,200
Louisiana	400	220,000	81,400
Maryland	25,000	17,750,000	1,473,250
Massachusetts	4,400	7,040,000	985,600
Mississippi	100	50,000	13,000
Missouri	5,000	4,425,000	575,250
New Hampshire	100	170,000	25,500
New York	6,000	7,050,000	564,000
North Carolina	240,000	144,000,000	13,680,000
Ohio	90,000	83,250,000	8,741,250
Pennsylvania	31,200	30,732,000	2,765,880
South Carolina	40,000	32,000,000	2,336,000
Tennessee	73,000	53,290,000	4,156,620
Texas	1,000	650,000	170,300
Vermont	200	335,000	50,250
Virginia	155,000	120,125,000	10,210,625
West Virginia	14,400	12,600,000	1,663,200
Wisconsin	31,500	37,170,000	3,419,640

XVI. COTTON ACREAGE AND PRODUCTION BY STATES, 1900–1909

States.	1900.		1909.	
	Acres.	Bales.	Acres.	Bales.
United States	25,758,139	10,245,602	30,938,000	10,386,209
Alabama	3,403,746	1,038,392	3,471,000	1,065,377
Arkansas	1,742,787	812,529	2,218,000	718,117
Florida	235,451	55,896	237,000	62,936
Georgia	3,783,015	1,272,838	4,674,000	1,901,830
Louisiana	1,480,781	720,088	930,000	269,573
Mississippi	3,194,795	1,061,973	3,291,000	1,109,580
Missouri	50,173	27,830	79,000	52,152
North Carolina	1,091,034	513,677	1,359,000	649,886
Oklahoma	709,006	349,355	1,767,000	573,786
South Carolina	2,195,252	787,231	2,492,000	1,164,309
Tennessee	662,612	225,350	735,000	253,398
Texas	7,178,915	3,368,310	9,660,000	2,554,520
Virginia	30,572	12,133	25,000	10,746

XVII. CONSUMPTION OF COTTON AND NUMBER OF ACTIVE COTTON SPINDLES IN THE UNITED STATES.—*U. S. Census*, 1890–1909

Year.	Section.	Consumption (bales).	Active spindles (number).
1909	United States	5,240,719	28,018,305
	Cotton-growing states	2,553,797	10,429,200
	New England states	2,144,448	15,591,851
	All other states	542,474	1,997,254
1900	United States	3,873,165	19,472,232
	Cotton-growing states	1,523,168	4,367,688
	New England states	1,909,498	13,171,377
	All other states	440,499	1,933,167
1890	United States	2,518,409	14,384,180
	Cotton-growing states	538,895	1,570,288
	New England states	1,502,177	10,934,297
	All other states	477,337	1,879,595

XVIII. PRODUCTION, CONSUMPTION, EXPORTS, AND IMPORTS OF COTTON FOR THE UNITED STATES: 1900–1909

Year.	Production.				Consumption (500-pound bales).	Exports of domestic cotton (500-pound bales).	Net imports (500-pound bales).
	Running bales.	Equivalent 500-pound bales, gross weight (number).	Average net weight of bale (lbs.).	Value per pound (cents).			
1909	10,386,209	10,315,382	475	14.3	....	....	....
1908	13,432,131	13,587,306	484	9.2	5,198,963	8,889,724	165,451
1907	11,325,882	11,375,461	480	11.5	4,493,028	7,779,508	140,869
1906	13,305,265	13,595,498	490	10.0	4,974,199	8,825,237	202,733
1905	10,725,602	10,804,556	482	10.9	4,877,465	6,975,494	133,464
1904	13,697,310	13,679,954	478	8.7	4,523,208	9,119,614	130,182
1903	10,015,721	10,045,615	480	12.2	3,980,567	6,290,245	100,298
1902	10,784,473	10,827,168	481	8.2	4,187,076	6,960,880	149,113
1901	9,748,546	9,675,771	489	8.1	4,080,287	6,928,697	190,080
1900	10,245,602	10,206,527	480	9.3	3,603,516	6,860,917	116,610

XIX. PRODUCTION OF METALS IN THE UNITED STATES. (*x*)

The Mineral Industry, by W. R. Ingalls

PRODUCTS.	Measures.	1908.		1909.	
		Quantity.	Value.	Quantity.	Value.
Aluminum	Lb.	13,000,000	$4,095,000	15,000,000	$3,345,000
Antimony	Lb.	6,914,000	553,406	6,556,000	422,277
Copper	Lb.	948,196,490	127,058,329	1,105,336,326	145,451,207
Ferromanganese (*q*)	Long tons.	152,018	6,460,765	225,040	9,885,000
Gold, fine	Troy oz.	4,574,746	94,560,000	4,800,783	99,232,200
Iron, pig	Long tons.	15,784,000	267,540,378	25,570,431	439,290,000
Lead	Short tons	318,876	26,785,584	369,164	31,548,755
Nickel	Lb.	(*e*) 500,000	250,000	(*e*) 500,000	250,000
Platinum	Troy oz.	750	14,350	750	18,653
Quicksilver	Flasks	(*o*) 20,147	903,391	20,592	953,410
Silver, fine	Troy oz.	52,440,800	27,722,304	53,849,000	27,733,312
Sodium	Sh. t	(*e*) 2,000	1,000,000	(*e*) 2,000	1,000,000
Tin	Sh. t	(*v*) 1,200	707,160	(*w*)	....
Zinc (*y*)	Sh. t	210,511	19,897,500	266,462	29,326,808

(*e*) Estimated. (*o*) Flasks of 75 lb. (*q*) Includes Spiegeleisen, although the value is given as for ferromanganese. (*v*) Recovered from scrap metal. (*w*) Statistics not available. (*x*) Includes only metal produced from domestic ores except in case of zinc. (*y*) Includes zinc from foreign ore.

XX. PRODUCTION OF COAL IN THE UNITED STATES

(In tons of 2,000 lbs.)

The Mineral Industry, by W. R. Ingalls.

BITUMINOUS.	1908.	1909.
	Short Tons.	Short Tons.
Alabama	11,523,299	12,872,619
Arkansas	1,866,565	(*b*) 1,940,000
California and Idaho	21,760	18,540
Colorado	9,703,567	10,736,459
Georgia	301,640	285,700
Illinois	49,272,452	(*c*) 49,163,710
Indiana	10,987,419	13,692,089
Iowa	7,149,517	7,166,253
Kansas	5,960,417	6,107,040
Kentucky	9,805,777	10,296,145
Maryland	4,377,094	4,524,112
Michigan	1,839,927	1,758,020
Missouri	3,400,644	3,787,431
Montana	1,879,417	2,541,679
New Mexico	2,772,586	3,010,000
North Dakota	317,840	354,305
Ohio	26,270,639	27,756,192
Oklahoma	3,633,108	4,192,400
Oregon	(*a*) 86,259	91,400
Pennsylvania	118,309,680	136,205,695
Tennessee	6,082,851	7,090,420
Utah	1,786,204	2,322,209
Texas	1,280,490	1,859,259
Virginia	4,224,821	4,310,360
Washington	2,977,490	3,261,227
West Virginia	(*c*) 44,370,261	46,697,017
Wyoming	6,100,000	5,020,740
Alaska Nevada	10,240	(*b*) 16,000
Total	336,311,964	367,076,021
ANTHRACITE.		
Colorado	69,440	72,100
New Mexico	(*b*) 20,000	(*b*) 14,000
Pennsylvania	80,240,138	77,040,880
Total	80,329,578	77,126,980

(*a*) As reported by the U. S. Geological Survey. (*b*) Estimated. (*c*) For fiscal year ending June 30th.

XXI. PRODUCTION OF COKE IN THE UNITED STATES

(In tons of 2,000 lbs.)

The Mineral Industry, by W. R. Ingalls

	1908. Short Tons.	1909. Short Tons.
Alabama	2,336,602	2,521,000
Colorado	854,662	1,091,882
Georgia & No. Carolina	41,980	(*a*) 50,000
Illinois	310,540	425,970
Kansas	10,000	(*a*) 12,000
Kentucky	54,515	38,849
Missouri	5,000	(*a*) 5,000
Montana	29,482	42,960
New Mexico	353,240	430,000
Ohio	240,000	250,000
Oklahoma	24,580	38,620
Pennsylvania	12,287,828	23.098,483
Tennessee	250,491	255,900
Utah	321,200	346,510
Virginia	1,219,927	1,294,942
Washington	37,381	42,335
West Virginia	(*c*) 2,978,203	3,125,451
The Other States	(*b*) 1,994,218	2,007,000
Total	23,349,849	35,076,902

(*a*) Estimated: (*b*) Includes output of by-product coke for Massachusetts, Maryland, Minnesota, New York, Michigan, Wisconsin. (*c*) Fiscal year ending June 30.

XXII. PIG IRON PRODUCTION OF THE UNITED STATES

(In tons of 2,240 lbs.)

The Mineral Industry, by W. R. Ingalls

KIND OF IRON	1904.	1905.	1906.	1907.	1908.	1909.
Foundry & forge	4,358,295	5,837,174	5,709,350	6,397,777	4,307,734	6,386,833
Bessemer pig	9,098,659	12,407,116	13,840,518	13,231,620	7,216,976	10,557,370
Basic pig	2,483,104	4,105,179	5,018,674	5,375,219	4,010,144	8,250,225
Charcoal	337,529	352,928	433,007	437,397	249,146	376,003
Spiegel & ferro	219,446	289,983	300,500	339,348	152,018	225,040
Total	16,407,033	22,992,380	25,302,049	25,781,361	15,936,018	25,795,471

For statistics of Steel production, see XX, *Manufactures*, page 518.

XXIII. COPPER PRODUCTION OF THE UNITED STATES

(In pounds)

The Mineral Industry, by W. R. Ingalls

	1906.	1907.	1908.	1909.
Alaska	8,700,000	6,610,000	4,394,887	4,057,142
Arizona	263,200,000	256,866,761	290,167,795	292,042,829
California	24,421,000	34,398,823	36,890,353	53,357,451
Colorado	9,565,000	13,344,118	13,896,689	10,487,940
Idaho	9,493,000	11,471,101	8,749,559	7,770,010
Michigan	224,071,000	220,317,041	222,267,444	227,247,998
Montana	299,850,000	226,290,873	252,558,330	313,838,203
Nevada	426,000	1,462,450	12,174,269	51,835,309
New Mexico	6,262,000	8,652,873	8,523,652	5,134,506
Utah	49,712,000	68,333,115	70,978,952	100,438,543
Wyoming	146,000	2,919,137	2,384,356	89,654
Southern States	18,821,000	22,408,696	20,822,368	22,837,962
Other States	3,379,000	6,166,098	4,387,836	3,746,895
Totals	918,046,000	879,241,086	948,196,490	1,092,884,442

XXIV. PRODUCTION OF SILVER IN THE UNITED STATES. (a)

STATES.	1908.		1909.		Preliminary 1910.
	Fine Ounces.	Commercial Value.	Fine Ounces.	Commercial Value.	Fine Ounces.
Alabama	400	$211	200	$103.	264
Alaska	204,600	108,160	198,600	102,279.	126,480
Arizona	2,900,000	1,533,056	2,523,600	1,299,654.	2,835,641
California	1,703,700	900,644	2,304,900	1,187,023.5	3,530,246
Colorado	10,150,200	5,365,802	8,846,300	4,555,844.5	8,747,777
Georgia	200	106	200	103.	286
Idaho	7,558,300	3,995,620	6,755,900	3,479,288.5	6,686,016
Illinois	2,000	1,057	900	463.5	1,727
Michigan	294,100	155,473	217,600	112,064.	268,642
Missouri	49,400	26,115	15,200	7,828.	32,900
Montana	10,356,200	5,474,702	12,034,500	6,197,767.5	11,519,059
Nevada	9,508,500	5,026,573	10,119,200	5,211,388.	9,346,256
New Mexico	400,900	211,932	324,200	166,963.	683,111
North Carolina	1,300	687	400	206.	1,215
Oregon	56,100	29,657	69,600	35,844.	62,848
South Dakota	197,300	104,301	196,300	101,094.5	113,460
Tennessee	60,900	32,494	65,300	33,629.5	75,714
Texas	447,000	236,302	408,100	210,171.5	365,854
Utah	8,451,300	4,467,695	10,551,100	5,433,816.5	11,242,301
Virginia	300	158	6,400	3,296.	34
Washington	86,800	45,886	75,200	38,728.	176,816
Wyoming	3,500	1,850	1,800	927.	1,363
Other States	6,500	3,436	3,000	1,545.	619,162
Philippine Isls	1,300	687	3,000	1,545.	1,523
Total	52,440,800	$27,722,304	54,721,500	$28,181,572.5	56,438,695

XXV. PRODUCTION OF GOLD IN THE UNITED STATES. (a)

STATES.	1908.		1909.		Preliminary 1910.
	Fine Ounces.	Value.	Fine Ounces.	Value.	Value.
Alabama	1,193	$41,200	1,412	$29,200	$29,416
Alaska	959,755	19,858,800	984,015	20,339,600	16,987,990
Arizona	120,948	2,500,000	127,082	2,626,800	3,375,256
California	935,157	19,329,700	1,001,625	20,703,600	21,146,150
Colorado	1,106,483	22,871,000	1,056,923	21,846,600	20,408,641
Georgia	2,719	56,200	2,099	43,400	25,488
Idaho	69,835	1,443,500	65,031	1,344,200	992,930
Montana	152,879	3,160,000	181,427	3,750,100	3,465,364
Nevada	565,525	11,689,400	792,752	16,386,200	17,941,643
New Mexico	14,819	306,300	12,230	252,800	397,974
North Carolina	4,717	97,500	1,519	31,400	54,884
Oregon	43,827	905,900	40,104	829,000	631,173
South Carolina	2,598	53,700	357	7,400	31,566
South Dakota	374,562	7,742,200	318,026	3,573,600	5,183,070
Tennessee	179	3,700	208	4,300	3,514
Texas	24	500	19	400	475
Utah	190,938	3,946,700	203,836	4,213,300	4,243,907
Virginia	174	3,600	193	4,000	558
Washington	12,274	253,700	20,754	429,000	711,359
Wyoming	368	7,600	188	3,900	3,990
Other States	179	3,700	309	6,400	328,496
Porto Rico	29	600	29	600	1,013
Philippine Isls	13,764	284,500	11,978	247,600	90,357
Total	4,574,746	$94,560,000	4,822,116	$99,673,400	$96,055,214

(a) The Statistics in this table are as reported by the Director of the Mint, those for 1910 being the preliminary figures (subject to revision).

XXVI. FISHERIES

Persons Employed, Equipment, and Value of Products, 1908.[1]

(United States Census)

States.	Number of Persons Employed	Vessels. Value, including Outfit.	Boats. Value.	Value of Apparatus of Capture.	Value of Accessory Property and Cash Capital.	Value of Products.
		Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
Alabama	972	130,127	33,900	23,083	81,603	387,218
Arkansas	998	8,115	36,740	30,966	13,150	207,172
California	4,129	573,322	492,680	501,621	91,300	1,969,727
Connecticut	2,147	994,331	117,870	83,778	1,085,522	2,981,721
Delaware	1,756	334,215	38,100	62,691	9,456	541,204
Florida	9,212	846,414	575,050	325,781	668,283	3,388,690
Georgia	2,525	89,527	79,030	54,505	185,000	700,964
Illinois	4,439	47,226	234,190	271,859	294,075	1,413,242
Indiana	986	7,700	15,530	28,500	22,391	223,145
Iowa	786	....	37,510	28,879	10,518	214,555
Kentucky	555	....	11,120	20,890	6,561	110,297
Louisiana	5,795	440,536	353,920	94,550	40,056	1,568,797
Maine	6,861	1,006,543	662,490	576,262	165,655	3,256,581
Maryland	18,392	1,000,780	643,720	368,774	86,035	3,305,673
Massachusetts	11,577	4,282,316	476,850	775,309	215,041	7,095,229
Michigan	3,472	327,232	266,770	820,620	598,591	1,473,055
Minnesota	934	16,054	35,760	42,849	32,685	191,946
Mississippi	2,037	372,434	45,660	57,646	46,246	556,174
Missouri	906	....	25,350	39,098	27,864	293,479
New Jersey	7,231	709,401	390,580	344,528	269,496	3,068,586
New York	6,775	1,749,961	307,610	361,808	1,412,603	4,593,702
North Carolina	9,681	281,838	251,460	367,426	369,529	1,776,023
Ohio	2,054	214,879	140,900	423,076	342,989	839,581
Oregon	4,772	140,405	367,350	795,488	64,750	1,356,460
Pennsylvania	1,250	254,301	26,060	113,972	87,100	513,110
Rhode Island	1,493	514,538	132,520	229,881	627,483	1,751,819
South Carolina	2,559	50,336	42,030	16,201	5,350	288,328
Tennessee	427	....	9,360	27,264	13,301	111,856
Texas	1,780	269,337	117,400	41,250	26,344	445,889
Virginia	20,066	1,332,104	733,360	484,597	433,548	4,715,744
Washington	4,954	1,593,562	376,820	1,161,669	309,235	3,513,238
Wisconsin	2,011	243,831	173,300	407,277	275,550	1,067,169
Other States	349	....	18,190	17,101	3,881	110,255
Total	143,881	17,831,362	7,269,180	8,999,199	7,921,191	54,030,629

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[1] These statistics are confined to the fishing industry and do not include packing and canning establishments or wholesale fish dealers.

XXVII. PUBLIC DEBT OF UNITED STATES, JUNE 30, 1910

Interest-bearing debt:	
Loan of 1925, 4%	$118,489,900
Loan of 1908–1918, 3%	63,945,460
Consols of 1930, 2%	646,250,150
Panama Canal loan, 2%	84,631,980

Debt bearing no interest:	
United States notes (greenbacks)	$346,681,016
National bank notes, redemption account	27,904,463
Old demand notes	53,282
Fractional currency	6,858,822

Debt on which interest has ceased:	
Funded loan of 1891	$55,750
Loan of 1904	14,450
Funded loan of 1907	1,129,250
Refunding certificates	17,160
Old debt	908,285

Certificates and notes issued on deposits of coin and silver bullion:	
Gold certificates	$862,936,869
Silver certificates	489,117,000
Treasury notes of 1890	3,672,000

Total interest bearing debt	$913,317,490	
Total debt on which interest has ceased	2,124,895	
Total debt bearing no interest	381,497,583	
Total certificates and notes issued on deposits of coin and silver bullion	1,355,725,869	
Total debt, June 30, 1910		$2,652,665,837

XXVIII. MERCHANDISE IMPORTED

Value and Per Cent of Total Value, 1900–10 by Groups

Year Ended June 30th—	Foodstuffs in Crude Condition, and Food Animals.		Foodstuffs Partly or Wholly Manufactured.		Crude Materials for Use in Manufacturing.		Manufactures for Further Use in Manufacturing.		Manufactures Ready for Consumption.		Total Value.*
	Value.	Per ct.	Value.	Per ct.	Value.	Per ct.	Value.	Per ct.	Value.	Per ct.	
	Dollars.		Dollars.		Dollars.		Dollars.		Dollars.		Dollars.
1900	97,916,293	11.52	133,027,374	15.65	276,241,152	32.50	134,222,045	15.79	203,126,341	23.90	849,941,184
1901	110,385,208	13.43	125,540,654	15.25	248,006,751	30.13	127,576,924	15.49	205,505,580	24.96	823,172,165
1902	120,280,302	13.31	95,350,256	10.56	303,001,868	33.55	147,656,292	16.34	231,420,820	25.62	903,320,948
1903	119,202,674	11.62	116,620,623	11.37	330,491,084	32.22	195,750,847	19.08	257,740,815	25.13	1,025,719,237
1904	132,223,895	13.34	118,222,862	11.93	320,794,431	32.37	160,233,890	16.17	252,812,835	25.51	991,087,371
1905	146,130,903	13.08	145,355,839	13.01	389,160,658	34.82	177,827,960	15.91	252,349,842	22.58	1,117,513,071
1906	134,322,347	10.95	140,358,109	11.44	414,687,999	33.81	220,298,751	17.96	307,674,728	25.10	1,226,562,446
1907	149,747,693	10.44	158,656,263	11.06	477,027,174	33.25	274,096,464	19.11	364,192,884	25.39	1,434,421,425
1908	145,577,427	12.19	147,008,870	12.31	363,823,723	30.43	196,320,135	16.43	331,204,635	27.77	1,194,341,792
1909	164,110,674	12.51	165,700,920	12.63	451,359,259	34.40	222,101,622	16.94	299,106,235	22.80	1,311,920,924
1910	148,100,000	......	177,200,000	......	568,100,000	......	287,900,000	......	365,200,000	......	1,557,906,671

XXIX. DOMESTIC MERCHANDISE EXPORTED

Value and Per Cent of Total Value, 1900–10, by Groups

Year Ended June 30th—	Foodstuffs in Crude Condition, and Food Animals.		Foodstuffs Partly or Wholly Prepared.		Crude Materials for Use in Manufacturing.		Manufactures for Further Use in Manufacturing.		Manufactures ready for Consumption.		Total Value.*
	Value.	Per ct.	Value.	Per ct.	Value.	Per ct.	Value.	Per ct.	Value.	Per ct.	
	Dollars.		Dollars.		Dollars.		Dollars.		Dollars.		Dollars.
1900	227,347,193	16.59	318,126,502	23.21	325,589,000	23.75	152,890,591	11.15	331,955,684	24.22	1,370,763,571
1901	246,394,140	16.88	336,605,378	23.05	397,767,463	27.24	148,013,625	10.12	317,764,367	21.76	1,460,462,806
1902	184,786,389	13.63	328,831,350	24.27	373,595,243	27.56	131,918,311	9.73	321,946,540	23.75	1,355,181,861
1903	185,308,064	13.31	323,244,697	23.22	408,442,137	29.34	140,666,864	10.10	327,468,629	23.52	1,392,231,302
1904	135,747,224	9.46	308,836,077	21.52	461,424,464	32.15	174,876,659	12.19	348,734,801	24.30	1,435,179,017
1905	118,185,098	7.92	283,065,098	18.97	472,114,493	31.65	209,926,174	14.07	402,049,798	26.96	1,491,744,641
1906	177,216,467	10.32	347,385,463	20.22	500,536,700	29.14	226,210,513	13.17	459,812,655	26.76	1,717,953,382
1907	167,348,227	9.03	345,706,609	18.65	593,145,135	32.00	259,442,028	14.00	480,681,423	25.93	1,853,718,034
1908	189,051,824	10.30	331,961,663	18.10	556,681,462	30.34	261,105,883	14.23	489,469,958	26.68	1,834,786,357
1909	135,693,409	8.28	302,555,341	18.47	520,907,436	31.80	231,186,607	14.11	440,229,407	26.87	1,638,355,592
1910	109,600,000	......	259,100,000	......	565,000,000	......	267,400,000	......	500,900,000	......	1,710,000,000

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* Including certain articles classed as "Miscellaneous."

XXX. ANNUAL APPROPRIATIONS MADE BY CONGRESS FOR FISCAL YEARS 1902 TO 1911

(*U. S. Statistical Abstract*)

Appropriated.	2d session 56th Congress. 1902.	1st session 57th Congress. 1903.	2d session 57th Congress. 1904.	1st and 2d sessions, 58th Congress. 1905.	3d session 58th Congress. 1906.	1st session 59th Congress. 1907.	2d session 59th Congress. 1908.	1st session 60th Congress. 1909.	2d session 60th Congress. 1910.	1911.
	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
To supply deficiencies....	13,289,314	24,944,124	19,651,968	25,083,395	28,998,961	28,165,777	10,509,311	42,662,723	18,980,035	12,728,214
Legislative, executive, and judicial expenses......	24,594,968	25,396,683	27,598,653	28,558,258	29,136,752	29,684,919	32,126,333	32,832,913	32,007,049	34,158,767
Sundry civil expenses....	54,574,285	54,394,601	61,763,709	49,968,011	56,269,468	80,789,470	103,046,481	94,115,143	117,842,109	114,066,626
The army..............	115,734,049	91,730,136	77,888,752	77,070,300	70,396,631	71,817,165	78,634,582	95,382,247	101,195,883	95,440,567
The naval service........	78,101,791	78,856,363	81,876,791	97,505,140	100,336,679	102,071,670	98,958,507	122,662,485	136,935,199	131,350,854
The Indian service.......	9,747,471	8,986,028	5,540,406	9,447,961	7,923,814	9,260,599	10,123,188	9,253,347	11,854,982	9,266,528
Rivers and harbors......	7,046,623	32,540,199	20,228,150	10,872,200	26,561,281	17,254,050	43,310,813	18,092,945	29,190,264	41,329,113
Forts and fortifications...	7,364,011	7,298,955	7,188,416	7,518,192	6,747,893	5,053,993	6,898,011	9,316,745	8,170,111	5,617,200
Military Academy.......	772,653	2,627,324	652,748	973,947	673,713	1,664,707	1,929,703	845,634	2,531,521	1,856,249
Post-Office Department..	....	....	....	....	....	....	....	....	....	243,907,020
Pensions..............	145,245,230	139,842,230	139,847,600	138,360,700	138,250,100	140,245,500	146,143,000	163,053,000	160,908,000	155,758,000
Consular and diplomatic service..............	1,849,428	1,987,483	1,968,250	2,020,100	2,123,047	3,091,094	3,092,333	3,538,852	3,613,861	4,116,081
Department of Agriculture	4,582,420	5,208,960	5,978,160	5,902,040	6,882,690	9,930,440	9,447,290	11,672,106	12,995,036	13,487,636
District of Columbia.....	8,502,269	8,544,469	8,638,097	11,018,540	9,801,197	10,232,102	10,440,598	10,001,888	10,699,531	10,608,045
Miscellaneous..........	7,961,140	4,081,747	3,025,064	2,860,828	5,139,545	40,172,757	1,079,289	14,086,212	1,327,176	3,255,128
Total.............	479,365,652	486,439,302	461,846,764	467,159,592	489,241,771	549,434,243	555,739,439	627,516,240	648,250,757	876,946,028

Advance to Reclamation Fund, reimbursable.................... 20,020,000
Permanent specific appropriations for 1911 estimated by the Secretary of the Treasury.................... 130,934,595

Grand Total....................1,027,900,623

II. NATIONAL STATISTICS

XXXI. ANNUAL CRUDE DEATH RATES PER 1,000 PERSONS LIVING, 1901–1909

[*Furnished by the United States Census*]

United States.[1]	Annual Average, 1901–05.	1908.	1909.
Registration area	[2]16.3	[2]15.4	[2]15.0
Per cent of total population	40.7	51.8	55.3
Registration States:			
California	[3]	[2]18.4	[2]17.9
Colorado	[3]	[2]17.0	[2]16.9
Connecticut	[2]16.0	[2]15.4	[2]15.6
Indiana	[2]13.0	[2]12.3	[2]12.3
Maine	[2]16.0	[2]16.0	[2]15.9
Maryland	[3]	[2]15.5	[2]15.1
Massachusetts	16.6	[2]16.5	[2]16.2
Michigan	13.2	13.4	13.1
New Hampshire	[2]16.4	[2]16.3	[2]16.4
New Jersey	16.1	[2]15.4	[2]15.4
New York	17.1	[2]16.3	[2]16.1
Ohio	[3]	[3]	[2]13.2
Pennsylvania	[3]	[2]15.7	[2]15.3
Rhode Island	17.8	15.9	15.6
South Dakota	[3]	[2]10.1	[2] 9.7
Vermont	[2]16.2	[2]16.0	[2]15.8
Washington	[3]	[2]14.8	[2]16.2
Wisconsin	[3]	[2]11.6	[2]11.6
Registration cities of 100,000 population or over in 1900:			
San Francisco, Cal	[2]20.9	[4]	[4]
Denver, Colo	17.2	18.3	17.0
New Haven, Conn	17.3	16.4	16.9
Washington, D. C	20.5	19.1	19.0
Chicago, Ill	14.5	14.5	14.6
Indianapolis, Ind	15.4	14.2	14.3
Louisville, Ky	[2]18.6	[2]16.0	[2]14.6
New Orleans, La	22.4	22.3	20.2
Baltimore, Md	20.0	19.0	18.7
Boston, Mass	18.8	18.3	16.8
Registration cities of 100,000 population or over in 1900:—*Continued.*			
Fall River, Mass	20.3	20.5	19.1
Worcester, Mass	16.8	16.7	15.5
Detroit, Mich	15.0	13.7	14.0
Minneapolis, Minn	[2]10.2	[2]10.3	[2]10.2
St. Paul, Minn	10.0	10.5	11.4
Kansas City, Mo	15.9	14.1	14.4
St. Louis, Mo	17.9	14.7	15.8
Omaha, Neb	[2]11.1	[2]12.1	[2]13.3
Jersey City, N. J	19.3	17.4	16.8
Newark, N. J	18.7	16.2	16.5
Paterson, N. J	16.9	15.5	15.3
Buffalo, N. Y	15.5	15.3	15.2
New York, N. Y	19.0	16.3	16.0
Bronx borough	20.9	17.0	15.9
Brooklyn borough	18.2	15.6	15.4
Manhattan borough	19.5	16.8	16.6
Queens borough	16.1	14.1	14.2
Richmond borough	19.0	18.4	18.1
Rochester, N. Y	14.6	13.7	14.4
Syracuse, N. Y	14.5	15.7	14.5
Cincinnati, Ohio	19.1	18.0	16.4
Cleveland, Ohio	14.9	13.3	12.9
Columbus, Ohio	15.4	15.2	14.0
Toledo, Ohio	14.3	14.6	14.6
Philadelphia, Pa	18.1	17.3	16.4
Pittsburg, Pa.[5]	19.9	17.3	15.8
Scranton, Pa	16.2	16.4	16.3
Providence, R. I	18.8	16.6	16.1
Memphis, Tenn	[2]18.3	[2]17.5	[2]17.2
Milwaukee, Wis	13.2	12.6	13.6

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[1] Deaths are not registered in many states. The rates given are for that part of the country included in the "registration area" by the Census Office, and for which satisfactory returns are obtainable. All rates are based on revised estimates of population derived from the census of 1910 or state censuses of 1905, except as indicated by the following note:

[2] Rate based on provisional postcensal estimate of population.

[3] Nonregistration.

[4] Population not estimated.

[5] Includes Allegheny.

XXXII. INTERNAL REVENUE RECEIPTS—1909–1910

	1909.	1910.
Spirits	$134,868,034.12	$148,029,211.54
Tobacco	51,887,178.04	57,889,351.59
Fermented liquors	57,456,411.42	60,572,288.54
Oleomargarine	902,197.31	1,099,502.84
Filled cheese	1,942.61	2,847.33
Mixed flour	2,618.04	3,051.30
Adulterated butter	38,450.70	37,350.70
Renovated butter	122,164.75	121,554.73
Miscellaneous	933,722.23	21,972,681.30
Total	$246,212,719.22	$289,727,839.87
Corporation tax	....	$20,959,784.74

III. HISTORY

THE UNITED STATES IN 1910

Albert Bushnell Hart

INTRODUCTION

The ultimate history of the United States for the year 1910 cannot be written till long hence, when the records of legislative bodies are published, the newspapers are analyzed, and the private correspondence of public men comes to light. Nevertheless the American Year Book can seize upon the fugitive events of the last twelve months, group them together, show what were the publicly expressed motives of statesmen, point out the directions in which public sentiment is moving, and put into form for reference, and later comparison year by year, the most important political and governmental incidents.

The obvious history of the United States which can be summarized and discussed at the end of a twelve months' period is that of parties, elections, political issues, pending controversies, and the workings of the national and state governments, together with the fortunes of political leaders.

The National Executive.—Jan. 1, 1910, the national executive was made up as follows: President (by the election of Nov., 1908), William H. Taft; Vice President, James S. Sherman; secretary of state, Philander C. Knox; secretary of the treasury, Franklin MacVeagh; secretary of war, Jacob M. Dickinson; attorney general, George W. Wickersham; postmaster general, Frank H. Hitchcock; secretary of the navy, George von L. Meyer; secretary of the interior, Richard A. Ballinger; secretary of agriculture, James Wilson; secretary of commerce and labor, Charles Nagel. All the Cabinet officers held from their appointment in March, 1909, immediately after the inauguration of the President. Of these officials, MacVeagh, Wickersham, and Nagel were new to Federal service; Meyer and Wilson served in Roosevelt's Cabinet; Dickinson was assistant attorney general in the second administration of Cleveland; Hitchcock was assistant postmaster general under Roosevelt; Knox was attorney general in McKinley's and Roosevelt's cabinets; and Ballinger was for a time commissioner of the general land office. Two of these officers, MacVeagh and Dickinson, had never been active Republicans.

The Republican Party was in complete control of the Federal Government on Jan. 1, 1910. It had held both Houses of Congress since 1895, and the Presidency since 1897; the Supreme Court, though representing no party, was certainly not hostile to Republican principles, so far as expressed in legislation. Under the merit system nearly all the minor places in the government, except the third- and fourth-class postmasters, were filled by competition and promotion; but most of the holders of lucrative and important Federal offices were Republicans, appointed by a Republican President and confirmed by a Republican Senate. The party was further strengthened by the great personal prestige of Pres. Roosevelt, who, during his administration, became the legislative leader of the party and of Congress, and by the weight of public opinion behind him, compelled Congress to pass a series of measures restraining corporations, and especially railroads; he had also caused suits to be entered against some of the most notable trusts.

The Sixty-first Congress.—The sixty-first congress, elected in 1908, and organized in the special session beginning March 11, 1909, was made up as follows: In the Senate, 60 Republicans and 32 Democrats; in the House, 219 Republicans and 172 Democrats. Joseph G. Cannon was duly elected to his fourth term as Speaker of the House of Representatives.

Republican Supremacy.—As a result of the state elections of 1908–09, the Republicans held the governorship in all the New England states; in all the middle states; in all the middle western states, except Ohio and Indiana; in all the Rocky Mountain and Pacific states, except Montana, Nebraska, Nevada, and Colorado. The governor of every southern state was a Democrat, except Kentucky and Missouri. In all 20 governors were Democratic; while 26 governors and the 5 appointive territorial governors were Republican. Most of the state administrative officers were of the same party as the governors.

The majority in the state legislatures was of the same political faith as the governor, with the following exceptions: The Democratic Arizona territorial legislature; the Democratic Kentucky legislature; and the Republican legislatures of Ohio, Montana, and Idaho. Leaving out of account the territorial governments, there were twenty-eight Republican legislatures, and eighteen Democratic.

Likewise, in the largest cities of the Union, the mayors of Boston, Philadelphia, Chicago, Cincinnati, Detroit, Indianapolis, Pittsburg, and St. Louis were Republican; the Democrats were in possession of New York, Buffalo, Cleveland, Baltimore, Louisville, New Orleans, Milwaukee, Minneapolis, and St. Paul; Toledo and San Francisco had third party mayors.

The Republican Platform. — Evidently, as possessors of such political power, the Republicans were bound to come forward with a positive policy, which should correspond to the demands out of doors, and at the same time fortify the party for its future contests. The path of legislation in 1909–10 was unusually plain, because of the platform adopted at the national convention in Chicago, June 18, 1908, in the drawing of which Mr. Taft had a prominent part. Parties, both state and national, have usually taken their platforms lightly; but Mr. Taft held that this platform was part of a tacit contract with the electors; that the pledges were to be redeemed; and in speeches both before and after his inauguration, and in several messages to Congress, he recalled to the legislators the duties imposed by that platform.

The chief pledges made by the Chicago platform were as follows: (1) On the tariff: "The Republican Party declares unequivocally for a revision of the tariff by a special session of Congress"—that revision to be based on the principle of "the imposition of such duties as will equal the difference between the cost of production at home and abroad, together with a reasonable profit to American industries"; duties to be such as will "maintain the high standard of living of the wage earners of this country"; and toward foreign powers "the establishment of maximum and minimum rates, to be administered by the President." (2) On the currency: "The development of a permanent currency system responding to our greater needs." (3) "The establishment of a postal savings bank system." (4) On trusts and corporations: "Amendments of the Sherman Antitrust Law such as will give to the Federal Government greater supervision and control . . . and secure greater publicity." (5) The Interstate Commerce Law to be amended "so as to give railroads a right to make and publish traffic agreements subject to the approval of the commission"; and "such national legislation and supervision as will prevent the future overissue of stocks and bonds by interstate carriers." (6) On labor: "Betterment of conditions among those who labor"; "the rules of procedure in the Federal courts with respect to the issuance of the writ of injunction to be more accurately defined by statute; and no injunction or temporary restraining order to be issued without notice." (7) On conservation: "We indorse the movement inaugurated by the administration for the conservation of natural resources." (8)

On internal canals: A comprehensive plan for the improvement of the "waterways, harbors, and Great Lakes." (9) On ship subsidies: "Encouragement to American shipping." (10) Health: Legislation to secure greater efficiency in national public health agencies. (11) New states: The admission of New Mexico and Arizona. (12) In general: Praise of Pres. Roosevelt's administration, and a pledge of "unfailing adherence to his policies."

The Democratic Platform. — This long program of continuance of policies already entered on, and extension of national power to new fields, does not seriously differ from the corresponding pledges of the Democrats, but that party also by the Denver platform of 1908 advocated the following explicit action: (1) Corruption: Laws limiting campaign funds and requiring "publication before election of all such contributions above a reasonable minimum." (2) On the tariff: "Immediate revision of the tariff by the reduction of import duties," especially on monopoly goods. (3) On trusts, railroad legislation, and banking: The platform went beyond that of the Republicans in specific suggestion. (4) On banking: A guarantee fund for national banks, or failing that, postal savings banks. (5) Income tax: The submission of a constitutional amendment. (6) Popular election of Senators. (7) A protest against the powers of the Speaker of the House.

THE TARIFF

The most contentious political question before the American people during the last twenty years has been the tariff. Up to 1880 it was not strictly a party question; as stanch a Republican as Garfield continued to his death opposed to a high tariff; and among those Western farmers who started the Republican party there was always some disposition to object to high duties on imports. In the campaign of 1880 the Democrats pronounced for a tariff for revenue only, and the Republicans for a tariff which should protect American labor; by the tariff of March 3, 1883, iron ore, pig iron, and sugar were included in the protected articles. Nevertheless, in the votes on this tariff, fifteen Democrats supported the bill.

Under Pres. Cleveland, from 1885 to 1889, the Democratic party was brought into line as opposed to a high tariff, and the election of 1888 was contested largely on that issue; by a close vote in New York, a state which includes a large importing interest, Harrison was elected. At the same time, the Republicans carried a majority of both houses, which proceeded to frame the McKinley Tariff law of Oct. 1, 1890, against which nearly all the Democrats voted. In the congressional and state elections a month later, an anti-tariff Democratic majority was secured for the next house and senate; and for the first time since the Civil War the attempt was made to revise the tariff downward. To the Wilson, or Wilson-Gorman law, as it is often called, Pres. Cleveland, then in his second administration, refused to affix his signature; it went into effect Aug. 27, 1894. Duties were modified, some reduced, and the free list enlarged; wool, for instance, was put on the free list. To replace the expected loss of revenue, an income tax was passed, which was held unconstitutional in 1895.

In the election of 1896 the principal issue was the currency, and the Republicans were reinstated in the White House, and in both houses of Congress. The tariff was in their hands, and in a special session called for the purpose was passed the Dingley Tariff of July 24, 1897. In general, the scale of duties was raised, and some effort was made by reciprocity to open our markets on favorable terms for what we do not ourselves produce, in return for freer foreign markets. The whole tariff system was much disturbed by the revenue legislation of 1898, made necessary by the Spanish War. With the exception of the Wilson act, which was distinctly protective, though in a somewhat less degree than the preceding McKinley act, every tariff between 1872 and 1909 was intended to be protective, and in most cases the duties were somewhat higher than under the previous act.

Payne-Aldrich Tariff of 1909.—In special session from March 11 to Aug. 5, 1909, there was an opportunity to test the promises of the Republican platform of 1908. That session was principally given up to the enactment of the tariff act of Aug. 5, 1909; which included a lively discussion as to whether "revision" of the tariff meant revision downward or simply readjustment. Senator Aldrich, who was more responsible for the measure than even Mr. Payne, leader of the House and chairman of the committee which drew the tariff, insisted that the party had made no promise to reduce the average scale of duties. As a matter of fact, in some cases the duties were somewhat raised, as in certain cotton goods. In general, however, the leaders of the party insisted that there was a great and permanent reduction in the rates, secured, partly by increasing the free list and partly by reductions on dutiable goods. (See XII, *Public Finance.*)

By a separate statute of Aug. 5th, the pledge as to the Philippine trade was kept, by providing that importations from the Philippine Islands of native products be admitted free into the continental United States, with certain restrictions.

The Tariff Board.—In the statute of Aug. 5th in the clause fixing a maximum and minimum tariff (another fulfillment of a platform pledge) was inserted the sentence:

> To secure information to assist the President in the discharge of the duties imposed upon him by this section and the officers of the government in the administration of the customs laws, the President is hereby authorized to employ such persons as may be required.

Upon the face of it, this referred only to inquiries as to the foreign tariffs. The President liberally construed the authority, and on Dec. 24, 1909, appointed a board of inquiry, consisting of Prof. Henry C. Emery, of Yale University; James B. Reynolds, then Assistant Secretary of the Treasury, and Alvin H. Sanders, of Chicago.

Attitude of the President.—In the minds of the Democrats the Payne-Aldrich tariff was wrong, and therefore amendable from the beginning; most of the insurgents were also low-tariff men, and throughout the country, especially in the middle West, there was a loud protest among Republican voters. In his message of Dec. 7, 1909, the President also showed that to his mind the Payne-Aldrich tariff was not a finality. He pleaded for economy in the public expenditures, commented on the frauds in the collection of the customs, and spoke well of the proposed tariff board. On the general question of the tariff, he declared that he should recommend further legislation "if the facts secured by the tariff board are of such a character as to show generally that the rates of duty imposed by the present tariff law are excessive under the principles of protection as described in the platform of the successful party at the late election."

This attitude was in two respects a deviation from the regular Republican procedure with regard to the tariff. In the first place, the President seemed to suggest that a tariff which had been in effect only about four months could be amended; in the second place, that the judgment of Congress upon the critical question of the rates of duties ought to be influenced by a board of experts outside the political field. This plan, tried in 1882 with little success, was now put forward, at first tentatively, then by many members of the party absolutely, as the proper method for framing future tariffs.

Under the vague authority of the tariff act the President sent the new commission abroad to investigate and report on tariff conditions in Europe, and he made of them also a kind of diplomatic agency for discussing tariff conditions with the Canadian Government. He was not satisfied either with the powers of the board nor with the funds which it could use, and he put great pressure upon Congress to widen the scope of its investigation. The high-tariff advocates were against any proposition that would revive the issue of the Payne-Aldrich tariff; but, with the aid of the insurgent vote, the President secured, June 25, 1910, an appropriation of $250,000, thus enabling the board to employ a body of expert investigators. At the same time they were authorized to investigate the cost of manufacture and the wages of labor in other countries, and to report their findings. The only purpose of such an investigation must be to furnish a basis for discussion and legislation by Congress; that is, possibly, for a modification of the Payne-Aldrich tariff. For the time being the President defended the tariff as a downward revision, asserting that it was "the best that had ever been passed, and that the party had substantially complied with its promises with respect to the tariff."

Maximum and Minimum.—The provision of the act of Aug. 5, 1909, as to the maximum scale of duties, provided that in addition to the minimum duties, which were supposed to be ample for protection, there should be an addition of twenty-five per cent *ad valorem* on all importations from nations which should maintain tariff discriminations against the United States. This penalty scale, amounting in some cases to fifty per cent, or even one hundred per cent above the normal scale of duties, was already familiar in the tariffs of European countries; and a somewhat similar provision appears in the McKinley tariff of 1890 with reference to the Latin-American countries. Commercial collision seemed almost inevitable with several foreign powers, of which one of the most difficult to deal with was Germany; but, Feb. 10, 1910, an agreement was reached with Germany by mutual concessions, and the President issued a proclamation announcing that the minimum applied to that power. A serious controversy arose with Canada, which had long been in a state of tension with regard to trade with the United States. Questions of lumber, of paper stock, and other issues came up, but were all adjusted at last, and on March 30th Canada and Australia were proclaimed to be entitled to the privileges of the minimum tariff rates—the last countries with which satisfactory arrangements remained to be made. (See XII, *Public Finance.*)

Republican Dissensions.—Aside from the new legislation on the tariff board no further action was taken by Congress on the tariff in 1910, but the controversy continued to rage out of doors. The administration was not a unit on the question, and throughout the session of Congress there seemed a disposition to weed out of the party Republicans who protested against the Payne-Aldrich act. In April, Atty. Gen. Wickersham, in a public speech, laid down the doctrine that opponents of the tariff could not be considered Republicans; and Pres. Taft, in May, explained that he had signed the bill because otherwise "I would cause such a split with my party in Congress that the entire program of progressive legislation, to which I had dedicated the whole strength of my administration, would be put in jeopardy." Apparently the split could not be avoided, for most of the insurgents in Congress took open ground against it, and in July, 1910, Senator Bristow, of Kansas, attempted to show on the stump that Senator Aldrich had used his opportunity as chief author of the tariff to secure an advance in rubber duties favorable to his personal interests.

The Rise in Prices.—Meanwhile, as in 1890 after the passage of the McKinley tariff, prices began steadily to rise, including many of the necessities of life. Wholesale prices on meats and other supplies advanced, and retail prices rose out of proportion; vain efforts were made by boycotts of the retail meat dealers in Cleveland, New York, and elsewhere, to compel them to reduce prices. The anti-tariff people saw in this the influence of a rigid protective tariff, combined with the power of great trusts controlling the greater part of the supply of prime necessities. The high protectionists insisted that prices were rising all over the world for reasons that had nothing to do with tariffs. In June, 1910, a Senate committee, under the chairmanship of Senator Lodge, reported that high prices were due to other causes than the tariff, and that the scale of increase had been much exaggerated. The whole controversy was injected into the fall elections of 1910, where high prices was probably the most important issue.

Corporation and Income Taxes.—Besides dealing with these two tariff pledges of the platform, Congress attempted to make good two others. Included in the tariff act was a tax on corporations, which was an assertion of the right of Congress to lay a "special excise tax," amounting to one per cent on net income; and at the same time the act, indirectly through the requirement of a return showing the net income and how it was arrived at, asserted the authority of the Federal Government over corporations throughout the country, and provided machinery to elicit information of great significance as a definite basis for additional restrictive acts.

The Republican Congress in one particular fulfilled a pledge of the Democratic platform, by submitting to the states almost without opposition in either House (July 12, 1909), a constitutional amendment authorizing Congress to lay an income tax without regard to population or to the source of the income. (See V, *Law and Jurisprudence;* also XII, *Public Finance.*)

Defense of the Tariff.—During the recess of Congress from Aug. to Dec., 1909, the principal political issue was whether the Republican Party had kept its platform promise in revising the tariff. Throughout the debate Pres. Taft had thrown his influence in favor of a lower scale of rates, and he made no secret of his belief that the wool and woolen schedule was unreasonably high. But in a speech at Winona, Minn., Sept. 17, 1909, he took occasion to defend the whole tariff as the best measure obtainable under the circumstances. Mr. MacVeagh, Secretary of the Treasury, however, Dec. 18, 1909, urged in public that the Payne-Aldrich tariff was not definitive, but subject to change as the need was perceived.

TRUSTS AND COMBINATIONS

Of all the questions which from year to year come into the political campaigns, and arouse debate in Congress, the most vital and the most passionately disputed at present is the regulation of combinations of capital. It has been a staple of the platform, the stump, and the legislature for nearly forty years, and at times has been the separating point of party and factional divisions. This is the more striking inasmuch as when the Federal Constitution went into effect in 1789, there was hardly a corporation in the United States except three banks and a few insurance companies. The rapid increase of capital, however, gave an impetus to the growth of corporations, which drew together small investments, commanded large capital, and were continuous. At first charters were issued for each corporation separately, often after a hot legislative fight; later many of the states adopted the system of general incorporation laws; and for more than fifty years there has been a steady increase in restrictions on the organization and methods of corporations.

The issue of the danger of corporations was squarely raised by Jackson in his assault on the United States Bank in 1832; and the Democratic Party made it a political tenet to oppose any national bank. During the Civil War the Federal Government departed from its long practice of refusing to charter any corporations other than in the territorial governments, and companies which had their seat in the District of Columbia or the territories; it chartered several Pacific railroads, and a system of national banks, which has now extended to 7,000 corporations. During and after the war came an era of railroad consolidation, by which numbers of state corporations were brought into harmony by fusions, by ownership of a majority of the stock of subsidiary roads, and by something closely approaching holding companies. The railroad service improved, as a consequence, and economies in operation among keenly competing lines steadily brought down freight rates, so that there was little or no complaint of either the railroads or their continued combination into ever larger units, establishing great systems under single control.

Rise of So-called Trusts.—The panic of 1873 caused the bankruptcy of a number of railroads and threw the transportation system into confusion. About this time a private firm in Cleveland, Rockefeller, Andrews and Flagler, was incorporated as the Standard Oil Company, and systematized the oil business in western Pennsylvania, and later its chiefs organized a corporation called the South Improvement Company, intended to monopolize the business of refining. By its superior facilities for shipping its products, it was able to drive many of its rivals out of business, and took over many of their plants at a low valuation. This was one of the first evidences of the power of a body of men to secure possession of nearly the whole of a great industry.

The South Improvement Company was substantially a trust in the modern sense, but the word was at first used in a different connection. In order to facilitate the reorganization of railroads and other corporations, and to provide a machinery for safeguarding the bonds and paying the interest, there grew up a system of trust companies, which handled securities as an intermediary between the issuing company and the investor. It was a short step to the conception that a majority of the stock of a railroad could be placed in the hands of trustees who should hold it and vote it for a time.

From this it was an obvious deduction that solvent corporations could be operated in harmony by this plan of putting their stock into the hands of a board of trustees which should act for all of them, and thereby make an aggregate of capital which was bound by no charter, obliged to make no returns, and subject to no service of process in case of suit. Thirty-nine companies engaged in various branches of the oil business in 1882 formed the Standard Oil Trust, all the stock to be received by nine trustees. This is the kind of combination to which the name Trust has been most frequently applied; it is practically an unchartered corporation acting without legal authority; and steps were taken both by the states and by the Federal Government to attack those unofficial combinations. The owners therefore abandoned that method of organization and took out regular charters; or more frequently operated through a bewildering system of holding companies.

The first method was followed by the United States Steel Corporation, organized in 1901 with a capital of $1,100,000,000, which was issued in place of the stock of a large number of companies which were thus consolidated into one enterprise. The second method was that followed by the Standard Oil Company which, through a variety of subsidiary and adjunct corporations, in some cases started under the guise of independent rivals, so far as possible kept its capitalization and profits out of the public view.

Railroads.—The great railroad systems were in part single companies, like the Great Northern, operating thousands of miles of railroad, and in other cases like the Pennsylvania, were a complexus of companies operating under charters of various states, combined with stock ownerships and leases. Although very similar to the great manufacturing and commercial corporations in organization, and equaling them in the monopoly which they enjoy in some parts of their business, the railroads from their beginning have had less freedom of action: their property, chiefly visible, they hold under specific charters containing many limitations; and their operations are affected by a public purpose, and subject to the common law doctrine of the common carrier. As they sell a service instead of a commodity, and have millions of customers, the principle of equal rates for equal facilities is comparatively simple and easy of application. Most of their business being indisputably commerce, and a great part of it interstate commerce, it was much easier to find national authority for regulating the railroads than for dealing with other forms of trusts and combinations.

State Regulation of Trusts.—The states began in the seventies to legislate against trusts, first, by perfecting the machinery for the organization and registration of corporations; second, by corporation taxes; third, by specific prohibition of combinations of corporations. In this they were much assisted by the common law doctrine of restraint of trade on the side of the trusts. They began as early as 1869 the organization of state railroad commissions, first with power simply of investigation, later with power to regulate the service and to fix rates.

National Regulation of Trusts.—By the interstate commerce act of Sept. 4, 1887, after long discussions, Congress laid down principles for the railroads which in part were extended later to other corporations. The main features of this statute are: (1) Congress assumed authority over combinations of railroad corporations by prohibiting pools. (2) Without specifically asserting the power to regulate the scale of rates, the statute prohibits discrimination between shippers, including a higher charge for the short haul than for a long haul over the same line. (3) The principle of publicity was introduced by provisions for sworn reports of the transactions of the railroads. (4) To apply this statute, Congress created an Interstate Commerce Commission, which was unlike any administrative body previously authorized by Congress and differed from most of the state railroad commissions in that it was both an executive body and a court, with, in the background, a possibility that it would also exercise legislative powers by fixing rates.

The Sherman Antitrust Act.—The next general statute relative to trusts was the Sherman act of July 2, 1890, which, without creating any new machinery of administration, forbade "every contract, combination in the form of trust or otherwise, or conspiracy in restraint of trade or commerce among the several states or with foreign nations." Apparently it was not supposed that the statute covered the railroads, and by the Supreme Court decision in the Knight case in 1885, and the Addyston Pipe case in 1899, the monopolization of manufacture, so far as it did not directly affect interstate commerce, was held not to be covered by the statute. In the Northern Securities case (1904) the act was, however, applied to an attempt to combine the Great Northern, and Chicago, Burlington & Quincy railroads, and that merger was held invalid by the Supreme Court.

Outside of special statutes on the transportation of liquor, uniform railroad safety appliances, and the like, no further anti-trust legislation was secured in Washington till 1903, when by the so-called Elkins act the principle of requiring the accounts of railroads to be submitted to a government bureau was extended to all corporations carrying on an interstate business. A bureau of corporations was established and began to make searching investigations on its own initiative into particular trusts and into general conditions.

The regulation of the railroads was subject to two difficulties: the Interstate Commerce Commission, as a court, was subject to review by the Supreme Court of the United States; and as an investigating body found it difficult to secure testimony. On the other side, abuses which had long been going on in the railroad business, were thrown into relief by the partial removal of the more obvious causes for complaints. Hence, on June 29, 1906, Congress passed an act much extending the authority of the Interstate Commerce Commission. Thenceforward, when the commission declared a rate to be reasonable, it was to stand until positively disallowed by the courts; express and sleeping-car companies were included, and refrigerator cars. Provision was also made for filing rates on combined rail and water routes. Rebates and passes were strictly prohibited.

Summary of Antitrust Legislation.—In the twenty years, therefore, from 1887 to 1906, the Federal Government laid down the following series of principles as to its powers over corporations, and most of those principles were affirmed by the Supreme Court: (1) The general powers of Congress, and specifically the power over commerce, apply to corporations (almost all of which are chartered by the states) substantially as they apply to individuals. (2) The power over interstate commerce applies to all corporations, transportation and others, in so far as they are concerned with the exchange of commodities from state to state, or between the United States and foreign countries. (3) As incident to this power, Congress may require the corporations to submit their accounts in a prescribed form. (4) Railroads may be subjected to special restrictions, based on the principle that they are engaged in a public service; those restrictions apply to their mode of operation, the uniformity of their rates and charges, and even to the scale of rates, including classification and charges. (5) Not only the enforcement, but the application of these principles may be put in the hands of a commission appointed by the President, which, within the general limitations of the statutes creating it, may lay down rules for the railroad, extending to the fixing of rates. (6) Appeals lie from the decisions of the Interstate Commerce Commission to the regular federal courts within those limitations fixed by the statutes.

Strictly speaking, these successive national statutes for regulating trusts of various kinds have not been political issues. The first interstate commerce act of 1887 was passed during Cleveland's administration, but was fathered by a leading Republican, Senator Cullom of Illinois. The antitrust act was introduced by a Republican, Senator Sherman, former Secretary of the Treasury. The acts of 1903 and 1906 were both secured in the administration of Pres. Roosevelt, backed by a Republican majority in both Houses. Had the Democratic Party been in power, it would probably have enacted more drastic measures, but on the same lines. No party has been willing to go before the voters as opposed to restriction of corporations.

For various reasons the laws were not very effective. In the case of the railroads, the great consolidations had already taken place. The most powerful trusts were organized as regularly chartered corporations. Jurisdiction over their transactions, so far as they began and ended within a particular state, was outside the field of national legislation, and very hard to reach by state laws. Perhaps the greatest change in twenty years was the crystallization of the principle that no corporation does a private business; that in order to keep the advantage of limited liability to the stockholders and action by a majority of the stock instead of consent of all those interested, the corporations must accept the inconveniences of public regulation, including a liability that their transactions and their business methods will be thereby made known.

THE CONSERVATION QUESTION

The Public Lands.—The Chicago platform was vague upon the issue of conservation which, alongside the tariff and the trusts, absorbed much of the attention of Congress and of party leaders. During 1910 all three of these issues were made cornerstones of the insurgent movement—the insurgents insisting both on new laws and on a different spirit in administration, in behalf of the public wealth in lands, forests, minerals, and water powers.

Both the word conservation and the thing for which it stands, are new in national politics, because from the first vote of the Continental Congress on public lands in 1780, till about 1905, the whole theory of the accepted land policy was that private ownership of land was the only normal and desirable form of economic organization. From the very beginning the public lands have been given away in profusion to states, old soldiers, road and canal enterprises, and individual settlers; or have been sold at a nominal price. Here was a great mass of potential wealth which the government sought to subdivide by turning over its title to individuals. "Uncle Sam is rich enough to give us all a farm," is the refrain of a popular song, which expresses the public belief that the lands ought not to be held as a source of public benefit.

The theory worked well enough till

a few years ago, for the state and national lands were sufficient to furnish millions of land owners, and the consequent rapid growth of the West built up new communities which were subjects of taxation for national and state governments. With the exception of a few unavailing reservations of royalties on minerals, no effort was made to retain for the public at large the unearned increment on land, or any of the special advantages which went with the land. Down to 1830 almost the only land that people cared for was agricultural land; but with the exception of a few salt and lead reservations, every purchaser or grantee got title to the subterranean contents down to the center of the earth, and no effort was made to reserve river and lake fronts.

Because of the neglect to legislate separately for grazing lands not suitable for tillage, the great graziers were therefore able, by acquiring the land along the water courses, to make the government land on ranges back of the streams valueless to anybody but themselves; for they alone could water the cattle. Three sorts of land were reserved from purchase on ordinary terms. Coal lands were from 1864 reserved at a special price, running up to $20 an acre; timber and stone lands were also held for an enhanced price; and the alternate sections in the midst of railroad land grants were sold at double price. On the other hand, much tillable land was not retained for settlers. The so-called "swamp lands" were given to the states; the so-called "desert land" was sold in large tracts at a low price. Practically all the usable agricultural land, excepting that which is also forested, has now passed out of the hands of the Federal Government. The people have retained in the open country some worthless lands that nobody would buy, and still hold millions of acres in the Rocky Mountains and Pacific slope, made up of barren rocks or arid plains. (See XI, *Conservation of Natural Resources.*)

Even in the mountains there are great areas of heavily timbered land; and though the theory of the government was that every head of a family, man or woman, was to have one and one only chance at free homestead land, and one other at preempted land to be bought for $1.25 an acre, somehow large estates were brought together of grazing, mineral, or timber land, and got into the hands of heavy capitalists or corporations. Much of the timber land was speedily cut; in some cases, as in northern Michigan, leaving the region worthless for any purpose. The idea of conserving the remaining timber supply first took legal form in a statute of March 3, 1891, authorizing the President to reserve in perpetuity such areas as he thought expedient as forest lands. Every President in succession has made use of this power, and on July 1, 1909, 194,500,000 acres had been reserved, including areas in Michigan, Florida, Arkansas, and all the states from South Dakota and Kansas westward. Many of these reserves had for the time being no timber growing on them. After 1878 in the Pacific states, and after 1892 in all states, the privilege of cutting timber on government land was withdrawn. Beginning with the so-called Forest Division of the Department of Agriculture, organized in 1881, there has been a regular government forest service, at the head of which Gifford Pinchot was placed in 1898.

The Objections Stated.—Three objections were brought against the policy of reserving timber lands: (1) that it interfered with the eventual settlement of fertile forest land which might be cleared; (2) that it deprived the people of the Far West of lumber supplies needed for buildings, mine timbers, and other purposes; (3) that it was unreasonable to put a restriction on the cutting of the timber in the West when the eastern forests had been cleared off without any such saving clause. The advocates of conservation replied that it was necessary to keep the forests in order to protect the water supply, prevent freshets, and preserve the navigability of the lower rivers; that a sufficient amount of timber could be annually cleared by scientific forestry without destroying the forests; that in view of the rapid drawing down of the supply it was necessary to preserve what was left and use it economically, or the country would be timberless. In one of his messages Pres. Roosevelt showed photographs of arid and gullied mountain slopes in China which were once forested.

In the West there are divisions of opinion as to forest conservation, on two different lines of cleavage. The lumbermen in general wish to have the forests sold so that they may have the profit of cutting them. On the Pacific Coast it is believed that the wealthiest man in the United States is a lumberman who has secured enormous tracts of the tall timber of Washington, Oregon, and Idaho. Opposed to them are the conscientious assailants, on general principles, of all that they consider privilege and monopoly. Another group of opponents to conservation includes large numbers of people who have no personal interest in lumbering, but hold that the forests, like other natural resources, are meant for the use of mankind at mankind's discretion; that each generation has found its sources of wealth, and posterity may be expected to provide substitutes for the resources which are used up nowadays.

Such people think the conservation of the forests a device of the East to prevent people in the West from having the same advantages as their brethren, who have raised no inquiry as to the conservation of Pennsylvania coal, West Virginia oil, and Ohio natural gas. Some public men, notably Senator Carter, of Montana, have championed this view, and opposed all serious restrictions on the disposal of timber and other public lands.

Water Powers.—The argument as to timber has applied also to water powers and privileges. From the opening up of the West, water and water rights were considered to belong to the settler whose quarter section included them. If he held both sides of a river he might carry the water off in canals for irrigation; settlers were few, and water, east of the Rockies, abundant. Within the last ten years, however, water rights have become one of the most complicated and serious questions in the West; there are contests over the distribution of water to members of companies and other users on the same trunk canal; suits are brought by people on lower reaches of rivers against new settlers who have come in above and withdrawn the supply. In the Supreme Court case of Kansas *vs.* Colorado in 1907 an unsuccessful attempt was made to show that Kansas had a right to unimpaired flowage of streams coming across the border from neighboring communities.

Irrigation.—By the year 1900 most of the obvious and many of the difficult systems of irrigation had been carried out by associations, and had sometimes fallen into the hands of monopolists. June 17, 1902, an act of Congress authorized the use of a fund made up of the money paid for lands, in schemes of irrigation. An act was passed authorizing the issue of bonds—$20,000,000 in California and elsewhere—subsequently to be repaid out of the sale of irrigated lands. This legislation made possible very costly irrigation projects, involving enormous dams, tunnels miles in length, and canals scores of miles in length. This policy meant the reservation of upper streams bordered by land which had never been yielded by the United States, and also some expropriation of land holders or water holders; but it was unlike the forest-reserve policy in that it held up little or no land from settlement and opened large tracts that would otherwise remain desert. The conservation of streams and the protection of catchment areas was therefore a popular policy in the West.

The same arguments did not precisely apply to the conservation of water powers, of which there are great numbers in the Cordilleran region. Those which lie in regions easily settled were taken up as the country developed, in most cases simply as parts of an ordinary land grant or purchase from the Federal Government. Such was the case, for instance, with Spokane Falls, Wash., exactly as was earlier the case with the Falls of St. Anthony on the Mississippi; around each grew up a manufacturing city. After 1900 the transmission of electric power at long distances became easy; as, for instance the power supply for the San Francisco traction system, which comes from the Sierra Nevada Mountains more than 100 miles away; water powers a long way from human settlement thus became available, and many of them were taken up. (See XXIX, *Electrical Engineering.*)

Others lay in forest reserves where no titles could be acquired, and hence great pressure was applied to the Federal authorities to withdraw some of those reservations. Per contra, Pres. Roosevelt extended the forest reserves, in some cases for the express purpose of protecting storage sites and water powers; for the new irrigation systems frequently included water powers.

The Minerals.—The third object of conservation was the minerals, and particularly coal. An elaborate system of mining laws, nearly all on the statute books of the states, regulates the system of locating claims for the metals. They are intended to prevent monopolies, and to set aside claims not actually followed up and worked. No state, however, has ever seriously limited the holdings of coal lands. The enormous coal fields east of the Mississippi have therefore, with few exceptions, passed into the hands of private owners. In the Cordilleran regions the railroads took over such coal lands as they recognized on their land grants; and having mapped the coal measures, they managed, in some cases by barefaced frauds, to get title to other large areas of land till recently owned by the government. As in the case of the cattle ranges, combinations were formed of employees and people acting for a fee, who would take up adjacent tracts of coal land and then convey them to large holders, whether individuals or corporations. To block this method entries for coal lands were sometimes held up by the land office. whether listed as either agricultural or mineral land, and great pressure was put on Congress to conserve the coal. The question was especially lively in Alaska, where magnificent deposits of coal have been found a few score miles inland from the coast, west of the great snow ranges.

Combinations of Colorado capitalists who had got together considerable tracts of lands in that state were interested in opening up Alaska, and up to 1908 met with little opposition in the preliminary steps of getting title. In 1909 the so-called Cunningham group of thirty-three adjacent claims was pending in the land office, and, if recognized as valid, 5,280 acres of coal-bearing lands, worth perhaps $4,000,000, would pass into private hands, and the possibility would be established of acquiring coal-bearing estates through defects in or manipulation of the land laws.

The Pinchot-Ballinger Controversy.—From year to year it has been evident in Congress that the forces were waning which desired the Federal Government to continue its policy of getting rid of the public lands and at the same time of the mineral and other advantages which went with the lands; within the Republican ranks was a body which insisted that the natural resources still within the control of the Federal Government ought to be conserved both for the benefit of posterity and to prevent the concentration of this mass of wealth in private hands. Repeated trials of strength were had in Congress on the question of appropriations for the national forest service, restrictions on land getters, and the holding up of large areas of public land from the ordinary settlement laws. In the special session of Congress of 1909, this controversy appeared in an acute form.

Pres. Taft appointed as Secretary of the Interior Judge Richard A. Ballinger, who had been for a year commissioner of public lands in Roosevelt's administration, and then withdrew, and later acted as counsel for some of the applicants for contested land claims. Ballinger therefore announced that as Secretary of the Interior he should make no decisions in those matters, but should leave them to his subordinates.

Gifford Pinchot, head of the forestry department, and a warm friend of ex-Pres. Roosevelt, came to the front as the defender of a sweeping policy of conservation, and by Sept., 1909, was openly attacking Sec. Ballinger on the charge that he was opposed to conservation, and was trying to engineer through the land office fraudulent or doubtful claims to lands in the Rocky Mountain region, and also to coal lands in Alaska. The President, who took a warm interest in conservation, attempted to mediate, or rather to stand neutral; but on Jan. 6th a letter of Pinchot's was made public severely reflecting on Sec. Ballinger, and the President forthwith removed him.

Investigation. — Attacks on Ballinger continued, and by an unusual procedure a joint resolution, signed by the President Jan. 19th, provided for a joint Senate and House committee of investigation. Before this committee—the twelve House members of which were elected by the House—Mr. Pinchot and his friends became practically prosecutors, for it sat rather as a court than as an inquiry. Louis D. Brandeis, of Boston, was the prosecuting counsel. Sec. Ballinger was practically compelled to take the defensive and to furnish counsel and witnesses. The most striking testimony was that of L. G. Glavis, who had been designated by the land office to investigate the questioned claims; he testified that as land commissioner, Ballinger had attempted to push them through.

Meanwhile the committee, of which Senator Nelson was chairman, and Senator Root was a leading member, sat in Washington and other places. On Sept. 9th a meeting of the committee was called at Minneapolis; at the appointed time some of the majority members failed to attend, and five minority members of the committee, being a majority of those present, brought in a report declaring that the charges of Pinchot against Ballinger had been substantially proven; the members of the majority withdrew so as to break a quorum, and the report of that part of the committee was withheld till after the elections. Pressure was put on the President to remove the secretary or to compel his resignation, but he replied that he could not remove a member of his Cabinet against whom no charges had been proven. Dec. 5th the majority of the committee reported exonerating Sec. Ballinger from any wrongdoing, but suggesting additional protection for the public reserves.

Legislation.—In Congress during 1910 several of the moot questions of conservation were raised and settled. On account of the large amount spent on the reclamation projects, and a somewhat slower sale of irrigated lands than had been expected, the head of the service had entered on projects which would require about $20,000,000 above the funds then in hand; and by a statute of June 25th, Congress authorized the issuance of certificates of indebtedness to meet this contingency; this means the rapid completion of projects now in hand. By an act of June 22, 1910, Congress authorized the entry of the surface of land suitable for cultivation, reserving the mineral contents to the government. This will dispose of the argument that reservations of coal and other mineral land stop the settlement of the country. Another statute, passed June 25th, reiterates the right of the President to hold up blocks of public land so that investigation may be made of its mineral contents, and also of alleged combinations to secure title by sharp practice.

Conservation Propaganda.—Out of doors the conservation movement is pushed by the National Conservation Association, of which Mr. Pinchot is president. In its present stage the conservation movement includes an appeal to the states to use their powers in preventing monopolies in water powers and other like advantages. Most of the water powers in the older states have long since gone into private hands, but there is still some opportunity for regulation. In the western states a strong party urges that the Federal Government has no right to lay upon the purchasers of its lands any restriction as to what they will do with the power; and the issue of state rights has been clearly raised. It is evident, however, that no legislation by the individual states can settle questions of irrigation and power which extend from one state into another.

The Appalachian Reserve Bill.—One of the complaints against Speaker Cannon has been his supposed lack of sympathy with conservation; and his clear opposition to the Appalachian reserve bill has been taken as a proof. That bill is in part an attempt to make the issue of conservation one in which eastern representatives shall be interested. Throughout the Appalachian chain from Maine to Georgia large areas of still forested mountains include the headwaters of navigable streams, flowing some east and some west. The argument for the protection of soil from destruction and of the rivers from freshets and dry times is as good for the Appalachian as for the Cordilleran region; but the Federal Government owns no land in the East. The State of New York has attacked the problem by acquiring 1,500,000 acres in the Adirondack and Catskill mountains as a state forest; and smaller reservations have been made in Pennsylvania, N. Hampshire, and other states. The Appalachian bill, which in one form or another has been pending in Congress for several years, and which has once passed the House of Representatives, would appropriate money for the purchase of large tracts in the eastern mountains. This would furnish an object lesson in scientific forestry; would preserve permanent parks and pleasure grounds in the midst of thickly populated states, and would probably draw off much of the opposition to conservation.

THE NATIONAL ADMINISTRATION

President Roosevelt's Administration.—The seven years' administration of Theodore Roosevelt accustomed the country to a system of government in which the President was active and powerful everywhere. By his messages, conferences with members of Congress, and appeals to the public, he suggested not only fields of legislation, but shaped the statutes, or helped to shape them, to a final form. As administrator he not only appointed public officers, but followed them up to see that they carried out his policy. Before the courts he initiated prosecutions, and sometimes expressed his disappointment if the decisions were not what he had expected.

President Taft and His Speeches.—To this system Pres. Taft, the friend, former secretary of war, and confidential adviser of Pres. Roosevelt, naturally fell heir. In the special session of Congress in 1909 he put a strong pressure on the legislators, and infused the executive and prosecuting officers of the government with his energy. Like his predecessor he also made many journeys to various parts of the country and freely spoke in public throughout the year. A summary of his activities will throw light on the position of the President in the American system of government, and will bring into relief the public questions which occupy the executive mind.

Jan. 17, 1910, the President addressed a meeting of the National Civic Federation at Washington upon the defects of American judicial procedure, especially in the criminal prosecution of wealthy and powerful men; and he urged that both the state and the nation should take up an active policy for the conservation of natural resources. The next day he welcomed the conference of governors at the White House, and dwelt upon the superior advantages of the English system of a responsible ministry for putting through legislation thought necessary by the executive power. Upon the question of uniformity he said, "With this movement toward uniform legislation and agreement between the states, I do not see why the constitution may not serve our purpose always."

The President strongly felt his responsibility as the titular head of the Republican Party; and on Feb. 12th, and again on the 22d, visited New York and held conferences with Gov. Hughes, Sen. Depew, Speaker Wadsworth of the New York assembly, Timothy L. Woodruff, state chairman, and Lloyd C. Griscom, city chairman, apparently upon the attitude which the New York Republicans ought to take upon the prosecution of Senator Allds for bribery. After the first of these conferences he made a speech at the dinner of the Republican Club upon the issue whether the actual and proposed restrictions upon corporations were hurtful to business. "If the enforcement of the law is not consistent with the present method of carrying on business," he said, "then it does not speak well for the present methods of conducting business, and they must be changed to conform to the law." He defended the pending legislative program in Congress, which was substantially based on his messages, and predicted that it would be embodied in law.

Evidently the criticism of the newspaper press annoyed the President, for, Jan. 28th, at a banquet of magazine writers and publishers, he warned them against overemphasis and undue superlatives, which caused readers to be indifferent to what they read. In a similar speech at Newark, Feb. 23d, he expressed the belief "that perhaps the newspapers don't carry in their pockets all the public opinion, and that perhaps the American people are able to see through something of hypercriticism, something of hysteria, and something of hypocrisy, and to have a real sympathy with the man who under a considerable responsibility is doing the best he can." A few days later he hinted that the newspapers were opposed to the tariff because printing paper had not been put on the free list.

On every occasion the President emphasized his legislative program, especially in a long trip taken March 16th–23d. In a speech at Rochester, March 18th, he spoke forcibly of the absolute necessity of carrying through the pledges of the Chicago platform, especially because a new tariff was supposed to be very dangerous for the party that made it; and the corporation tax with the proposed withdrawal of the pound rate on newspapers, and the postal-savings proposition, had raised up enemies. "I am tired," said he, "of consulting particular interests to see whether or not a particular thing should go through."

On March 20th, at Albany, the President held a conference with the Canadian Minister of Finance, who came there to meet him on the question of the maximum tariff; and a peaceful settlement seems to have been secured at this time. March 22d, in New York, he informed the Peace and Arbitration League that he stood for universal peace and arbitration, with two new battleships every year, adding: "I do not see why questions of honor may not be submitted to a tribunal supposed to be composed of men of honor." The same day he told the Press Club that "there are times in the White House when one is exercising what is supposed to be the power of the Presidency, when one gets really discouraged." This was a strenuous day for the President, since he also attended a banquet given to Herbert Parsons, member of Congress from a New York district; talked on the Far East with ex-Vice Pres. Fairbanks, and was pursued by a policeman for overspeeding in an automobile.

From April 29th to May 5th the President made another tour, accompanied by Sec. Knox. At a banquet in Buffalo he urged conservation, and pleaded in behalf of those who are responsible for carrying forward this work, that they shall not be traduced and misrepresented in reaching a solution of a problem most difficult.

Contrary to his usual precedent he allowed a reporter to note an interview, in which he expressed his approval of the income-tax amendment. In a speech at Pittsburg, May 2d, he upheld Sec. Knox's diplomacy in Manchuria, Nicaragua, and elsewhere, and advocated a general court of arbitral justice. May 4th, at St. Louis, at a meeting of the Farmers' Union, he set forth the absolute need of power to withdraw lands from settlement; "With this power in the hands of the President we can sit comfortably by and discuss and devise the best means of disposing of the great public domain to the benefit of present and future generations." He hinted that he might stand in the way of river and harbor appropriations which did not prove their feasibility and practicability.

May 9th, at Passaic, he defended the railroad bill then pending, and declared that it had not been weakened in the process of preparation. He predicted the passage of that bill and other measures included in his program. May 15th, in a public letter sent to Sen. Nelson, chairman of the committee then investigating the charges against Sec. Ballinger, he took responsibility for a letter which he had written on the Lawler affair; and which Ballinger's enemies asserted had been drafted by the Secretary of the Interior. May 27th he wrote a letter to Representative Tawney deprecating any criticism of southern hospitality. This arose out of a controversy as to the presence of southern members of Congress on a Presidential train in the South.

June 3d, at a Commencement of Ohio Northern University, he criticised the bar and the press; commenting on the "intensity with which lawyers have served their clients and the lightness of the obligation which they have felt to the court and to the public . . . if the standards set by some of the most successful of the newspapers in lack of truth, in coarseness, and in unfairness of criticism shall not improve in the next generation, it will vindicate the pessimists of to day. . . . But this muckraking episode will pass."

In a speech at Jackson, Mich., June 4th, to commemorate the birth of the Republican Party, the President declared that socialism was a great problem confronting the people; and that government by parties, and yielding to the will of the majority were the only protection against the nation breaking up into small groups.

As increases in rates had been announced by various railroads, while Congress was working upon the railroad bill, the President, June 6th and 7th, held a conference with the presidents of leading railroads, and secured from them an agreement that the increase should be suspended pending decision by the Interstate Commerce Commission.

The labor unions were much concerned because attempts had been made to apply to their organizations the general principles of the Sherman antitrust law and other restrictions on corporations. June 23d the President wrote to W. S. Carter, President of the Brotherhood of Locomotive Firemen and Engineers, that he was opposed to such an exception. "So long as the present antitrust law remains upon the statute books an attempt to modify its enforcement so as to render immune any particular class of citizens, rich or poor, employers or employees, is improper legislation and, in my judgment, ought to be opposed by your brotherhood."

On June 28th the President moved to Beverly, Mass., for summer quarters, whence he made several excursions by rail and automobile into the neighboring country. Two days later Col. Roosevelt called on the President at Beverly. July 4th, the President addressed the National Education Association in the Harvard Stadium, dwelling especially on the government of the Philippine Islands, and its educating effect in preparing the Filipinos to assume their own government. Aug. 5th he made an address at the dedication of the Pilgrim monument at Provincetown. Aug. 22d he wrote a letter disclaiming the use of his influence in the controversy between Col. Roosevelt and the regular Republican leaders in New York.

For the Republican campaign book the President wrote, Aug. 28th, a letter in which he summed up the legislation of Congress, compared it with the platform pledges, and declared that the party "has by its course set higher the standard of party responsibility for such pledges than ever before in the history of American parties." The Payne-Aldrich tariff he defended with qualifications: he considered it a decided step in the right direction, as being the first act which recognized the necessity of reducing rates, in order to deal with manufacturers who combined to keep up prices to the highest point possible short of incurring foreign competition. He dwelt on the difficulties of conservation, especially since there was a disposition to call on the Federal Government to drain swamp lands, the property of states or individuals, and he was careful not to commit himself on the Federal control of water powers.

Sept. 15th he made public a letter announcing that he would give patronage as freely to insurgents as to regulars. Sept. 19th he met Col. Roosevelt at New Haven at a private conference, the nature of which was not announced. At the Ohio Exposition at Cincinnati, he paid his respects to log-rolling for internal improvements, declaring that the last "pork barrel" had been opened—that is, that he would veto bills which he thought not for the public interest. About Oct. 1st, after a Cabinet conference, it was announced that all assistant postmasters would be placed in the classified service; and that the President would urge Congress to take similar action regarding the third-class postmasters. The Beverly house was closed on Oct. 17th, and on the 18th the President visited Ellis Island in New York harbor, and declared that steps ought to be taken to distribute the current of foreigners among the various ports.

He denied that the tariff was responsible for high prices, but saw much hope in the new tariff board, declaring that so soon as that board should complete its investigations of any schedule and should establish that the existing tariff was too high in that schedule, he would bring the matter to the attention of Congress with a view to amendment of the tariff. But it must be understood that the action of Congress should be confined to the subject upon which it had evidence before it, without adding changes in other schedules.

From Sept. 3d to 7th the President made a trip to St. Paul to deliver an address before the Conservation Congress. On Sept. 5th he gave credit to Pres. Roosevelt as the pioneer in the cause of conservation. On the question of the relative powers of the states and the Federal Government in this particular he said: "I am liberal in the construction of the constitution with reference to Federal power, but I am firmly convinced that the only safe course for us to pursue is to hold fast to the limitations of the constitution, and to regard as sacred the powers of the states."

Nov. 8th the President was in Cincinnati to cast his vote for the Republican ticket. Nov. 10th he sailed from Charleston on the United States warship *Tennessee* for the Isthmus of Panama, where he spent four days inspecting the work on the canal. As he was leaving, some boilermakers struck because the President would not agree on the spot to raise their wages from sixty-five cents to seventy-five cents an hour. Nov. 22d he was received with much eclat in Richmond.

This record of a year's participation of the President in the life of the people shows a sense of a public duty outside of the White House or the Capitol at Washington. Pres. Taft has attempted to combine the functions of administration, legislation, party chieftain, and man of the people.

Administrative Reform.—Alongside the political activity of the time goes a steady effort to improve the executive part of the national government. The Keep commission of 1905 having ceased its work, Pres. Taft obtained from Congress a limited appropriation of $100,000 for a study of executive methods. Dr. Frederick A. Cleveland, of New York, was appointed at the head of this commission as an expert in public finance and accounts, and at the end of the year 1910 was directing a study into the bookkeeping and the financial system of the government. Steps have been taken to combine the purchasing departments of the various Federal offices in Washington into one bureau, and to have a set of standard samples of the supplies most used by the government.

POLITICS IN 1910

The preceding account of the multiple questions pending when Congress reassembled in Dec., 1909—especially the tariff, corporations, and conservation—is necessary for an understanding of the internal struggle in the Republican Party during 1910, and the effect on the elections and politics of the year. 1910 is marked by the most formidable split in the Republican Party since the Liberal Republican movement of 1872.

In several sessions of Congress previous to 1909 a small number of members of the House had stood together in a refusal to vote for measures that had been approved by the steering committee, and were thus indorsed by the party; and the popular term "insurgents" was applied to them. At the beginning of the special session, March, 1909, some of these people, together with new adherents, protested against the reelection of Mr. Cannon; thenceforward all these dissidents, while their protests had not the same origin, were commonly called "insurgents," though they prefer the term "progressive Republicans."

Control of the House.—The regular Republicans—in the vernacular known as "standpatters"—grouped themselves around the person of Joseph G. Cannon, member of the House from Illinois and Speaker from 1903 to 1911. Their opponents, therefore, have made an issue of what they call Cannonism.

A system of party management through the parliamentary rules of the House of Representatives was devised by Speaker Reed in 1890. The fundamental parliamentary basis of this system is a committee on rules. This steering committee expressed its decisions to the House through a device called "bringing in a rule," that is, reporting a vote fixing the time and duration of debate on any pending measure. Such a report had precedence over all pending business and was not debatable. Since no contested measure could get a hearing without the consent or assent of the steering committee, there was practically not only a monopoly of bringing measures to a decision, but also a veto on the action of the House. In consequence the committee on rules became the source of legislation, so far as it cared to assume that function. By choosing which measures should be discussed, and in advance fixing the end of debate, they took into their hands the fate of every member's bill, more particularly public measures of every kind. The committee on rules was nominally the creature of the House, and its action could be reversed by the House; but that meant a repudiation of established leadership, an affront to the dispenser of good things, and a breach of party discipline. In any case the inaction of the committee on rules was harder to reach. Through the power of the Speaker over the floor, he guaranteed that no measures should be introduced or considered unless he was willing to let them come forward. The result was that the Speaker and his principal supporters became a legislative bureau; a responsible legislative committee was in permanent session, and the Speaker occupied a position very much like that of the prime minister in the British House of Commons.

The necessary votes for the support of the committee were furnished by the principle of party coherence; members elected as Republicans were expected to go into the Republican caucus for the speakership, abide by its vote, and support what they understood to be the party policy. A stronger influence was the unrestricted power of the Speaker to make the coveted committee appointments, upon which depend the opportunity of the member of Congress to do public service and establish a reputation as a man of force. Members who made trouble, and especially members who voted against measures which the party chieftains thought desirable, understood that they were likely to get a slender share of the desirable things in the gift of the Speaker.

This system grew up because in the experience of the House it facilitated business; committees no longer wrangled for precedence; disputes were smoothed out in committee rooms. The Dingley tariff of 1897 and many other public measures were put through by this process. On the other hand the virtual veto of the Speaker was used against many assaults on the public treasury.

In the Senate.—In the Senate a similar power was exercised by an unofficial conclave of Senators of long service and established power, among whom Sen. Aldrich, of Rhode Island; Sen. Lodge, of Massachusetts; Sen. Hale, of Maine; and Sen. Burrows, of Michigan, were the most prominent. Committeeships in the Senate are much more affected by seniority than by loyalty to a chieftain; and in general it is harder to get the Senate to accept the judgment of a committee; but the steering committee could usually prevent the passing of a bill which they disfavored, and were the only people from whom constructive public legislation could be expected. Into the Senate there came, beginning with LaFollette, of Wisconsin, in 1905, several members who, from the first, refused to accept the authority of the steering committee, and made themselves the spokesmen for bills and amendments which were obnoxious to the leaders.

The Leaders in Insurgency.—In the tariff debate of 1909 many of the insurgents opposed the schedules and joined with the Democrats in declaring that the tariff bill was neither a reduction nor a fulfillment of the Chicago platform. When Congress met in Dec., 1909, these men were more determined and more numerous than ever. The principal Senators among them were LaFollette, of Wisconsin; Cummins and Dolliver, of Iowa; Beveridge, of Indiana; Bristow, of Kansas; and Clapp, of Minnesota; and in the House, Murdock and Madison, of Kansas; Norris, of Nebraska; Cooper and Lenroot, of Wisconsin; Hayes, of California; Poindexter, of Washington; and Fowler, of New Jersey. On test votes through the session of 1909–10 they proved to have about eight votes in the Senate; and forty votes in the House, which was enough in coöperation with the Democrats to make a small majority there. The political action of the insurgents will be separately discussed.

Attacks on the Speaker.—In both Houses the spirit of opposition rose to an unexpected height in the session of 1909–1910. March 15, 1910, came an open attack on Mr. Cannon who had repeatedly emphasized the fact that the Speaker is elected by the House and may be deposed by a majority vote of the House. About forty insurgents voted with most of the Democrats to overrule a formal decision of the Speaker. Then followed a contest lasting four days, ending with a vote of 191 to 156, that the committee of rules be reorganized, and the Speaker left out of it. In the House of Commons such a vote would have been followed by the resignation of the premier. Mr. Cannon declined to resign, but intimated his willingness to put a motion to remove him. This would mean the election of a successor and the insurgents could not commit themselves to voting for a Democrat, and the motion to declare the chair vacant was lost by a vote of 155 to 192. During the remainder of the session, Mr. Cannon refrained from any violent controversy and the motive force for legislation came to be the President and his immediate friends. (See VI and VII, *The Speakership.*)

Insurgency in Legislation. — The breaking down of the legislative machinery in the House, and its impairment in the Senate, threw the Republican Party into confusion. With its majority in both Houses, and its President, it was responsible for the legislation of the session; and besides the regular appropriation bills, a variety of measures were presented in the Chicago platform, urged by the President in his messages, and were popular out of doors. One of the main reasons for the attack on Cannon was that he was supposed to hold back legislation which the constituents of his fellow members wanted.

As early as Feb., 1910, the President strongly urged the pending bills for postal savings banks; for further regulation of the railroads, especially of their stock issues; for the prohibition of judicial injunctions without notice; for the admission of New Mexico and Arizona; for conservation; for the improvement of waterways; for reducing the expenditures of the government; and for Federal incorporation of corporations. He thus placed himself before the country as the propulsive force for legislation. May 9th he again urged the passage of bills for postal savings banks, publishing campaign expenses in national elections, railroad regulation, anti-injunction, and the statehood of New Mexico and Arizona. His personal influence on members of both Houses was freely used, and he became the concentrated point of public opinion directed upon Congress.

While the insurgents were willing that the President should help on bills that they desired, they had no intention that he should draft them, and several of these pending measures, especially the railroad bill, were amended into a more drastic and radical shape, by combinations of Democratic and insurgent votes, when necessary to overcome a standpat majority. The insurgent Senators La Follette, Cummins, and Dolliver, were very effective in pushing these amendments through the Senate; while at the same time they publicly assailed Cannon and his friends as people who acted from the viewpoint of the corporations.

Congress adjourned June 25, 1910, after passing several of the bills in which the President was most interested. (See VII, *National Administration.*)

The only bill which the President had strongly at heart, and which he was unable to secure, was that regulating injunctions; great complaint has long been made by labor leaders that the injunction is used as a swift and unexpected weapon, where there is plenty of statute law to cover the case.

One of the incidents of the last months of Congress was the announcement of Sen. Hale, of Maine, that he would not stand for a reëlection; a little later he lost the majority in his party at home. Sen. Aldrich, of Rhode Island, who had for years been the most effective member of the Senate, especially in financial legislation, and who had presumably control of the Rhode Island legislature, on April 19th also gave notice that he should retire at the end of his term in 1911. Mr. Cannon, however, and most of his strong supporters, had no idea of withdrawing, and held to the doctrine that they were the spokesmen of the real Republican Party; that the insurgents were much the same thing as Democrats.

THE CAMPAIGN OF 1910

Throughout the year 1910 the elections, both state and local, were unfavorable to the Republicans. In the mayoralty election in New York, Nov., 1909, Judge Gaynor, a Democratic candidate, unpledged and not subservient to any faction of that party, was elected over Otto T. Bannard, a strong Republican candidate, and William R. Hearst, running practically as an Independent. In Boston, Jan. 11, 1910, a straight Democratic candidate, John F. Fitzgerald, was elected mayor by a small majority over J. J. Storrow, a Reform Democrat, who received most of the Republican votes. In Milwaukee, April 5, 1910, an out-and-out Socialist mayor was elected. March 22, 1910, Eugene N. Foss was elected to fill a vacancy for Congress by a large majority in a strong Republican district in Massachusetts. April 19th, James D. Havens was chosen member of Congress from the Rochester district, New York, over Aldridge, an old-time Republican leader.

Aug. 2d, the insurgents carried the Republican primaries in Kansas, and the same thing happened in California, Aug. 16th; Sept. 6th, the Vermont election showed a great decline of the Republican normal majority, and on the same day the progressive Republicans carried the primaries of Wisconsin, Michigan, and New Hampshire, followed shortly after by the Republicans of Washington and Minnesota.

Two currents of opposition were plainly eating into the Republican strength — the Progressives were, wherever possible, overthrowing the old party leaders, dropping Senators and members of Congress who remained standpat, and forcing the Republican state parties to accept their political principles. This meant divisions and rivalries, which in many places seriously lessened the Republican vote. On the other hand, in all the elections previous to Nov., the Democrats were evidently making gains, partly by the Republicans staying away from the polls, partly by outright conversions, and partly by attracting first-time voters.

In the New England states the regular Republicans remained in party control down to the elections of Nov., 1910. In most of the Republican western states the Progressives got control of the party influence and party prestige. In several other states the contest was fought out in the state conventions. Ohio, as the President's state, and as already doubtful, inasmuch as the governor was a Democrat, was a cyclonic center. Notwithstanding the efforts of the Progressives, whose chief spokesman was James A. Garfield, Secretary of the Interior under Roosevelt, the Regulars carried the convention, and nominated Warren G. Harding as their candidate for governor; the Democrats renominated Gov. Harmon.

MR. ROOSEVELT'S CAMPAIGN

In New York, and throughout the Union, the course of politics was much affected by the attitude of two Republican leaders—Pres. Taft and Mr. Roosevelt. No similar national leaders appeared on the Democratic side. Mr. Bryan no longer had influence over his party, and in his State, Nebraska, took an attitude in favor of local option which caused him to be disavowed by the local Democracy. In the Republican Party, strong in men of national reputation and power, Mr. Cannon, the fountain of legislation in Congress, belonged to the declining wing of his party. Such men as LaFollette, Beveridge, and Cooper were out of favor at the White House, as well as in the councils of Congress. James R. Garfield, Gifford Pinchot, and other special friends and aids of Pres. Roosevelt, were out of office.

The President was naturally anxious to heal the dissensions and to aid the Republicans to present a united front in the fall elections; on the tariff he emphasized more and more the probable work of the tariff board in reporting such information as in the course of two or three years would enable Congress to work out a rational series of changes in the tariff. With regard to insurgency, on Sept. 15th he authorized a letter by his private secretary, Mr. Norton, to the effect that, although he had theretofore held back patronage from insurgent members of Congress, he should now treat them as good Republicans on the same basis as the standpatters; and in his speeches, correspondence, and private conversation, he set forth his desire to be the leader of a united party, but he made few campaign speeches, and neither the insurgents nor standpatters accepted him as the exponent of their policies.

Roosevelt in Africa and Europe.—The most prominent figure in the campaign was Mr. Roosevelt, during half the year 1910 out of the country, and entirely outside American politics. Soon after his retirement from the Presidency, March 4, 1909, he went to the interior of Africa. As he at last bent his steps homeward, a succession of incidents made clear that he was still interested in the welfare of mankind. March 28, 1910, he made a speech in Cairo, in which he upheld British rule, and strongly condemned the recent assassination of an Egyptian minister of state. On April 3d the press received the correspondence between a representative of Mr. Roosevelt and Cardinal Merry del Val, papal secretary of state, withdrawing from a proposed audience with the pope on the ground that the cardinal expected of him a pledge not to be present at a meeting of the Methodist mission in Rome. May 10th, he was the guest of the Emperor of Germany; May 31st, he made a speech at Guildhall, in London, criticising the British colonial policy for a lack of vigor. It was explained later that this speech (as was the case also with the Cairo speech) had been read in advance by statesmen in authority. During his European visit he also delivered the following formal addresses, on the topics named: April 23d, at the Sorbonne, Paris, "Citizenship in a Republic"; May 5th, the Nobel Prize Address at Christiana, "International Peace"; May 12th, at Berlin, "The World Movement"; June 7th, Oxford University, Eng., "Biological Analogies in History."

In every country that he visited, Col. Roosevelt, as he has usually been called since his retirement from the Presidency, was received with immense popular enthusiasm, and with every honor that could be bestowed on a former President of the United States and a man of extraordinary force of character.

Roosevelt in New York State.—Returning to America, June 18, 1910, where he was received with prodigious demonstrations of affection and admiration, he settled down at his home in Oyster Bay. June 29th, he was in Cambridge as presi-

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dent of the Harvard Alumni Association, and there met Gov. Hughes of New York, who was then trying to get a direct primary law from an unwilling Republican legislature. At Gov. Hughes's request it was publicly stated that he would support the measure, and in the next few days his friends in the New York legislature attempted to put it through. That legislature, though called in special session to consider this measure, adjourned without action.

This step was intended as a rebuff to Col. Roosevelt. Aug. 15th, a meeting of the New York State Republican committee was held to select a temporary chairman for the pending state convention. Col. Roosevelt was nominated by Lloyd C. Griscom, chairman of the Republican city committee, but by the efforts of Timothy L. Woodruff, state chairman, and William Barnes, Jr., chairman of the executive committee, Mr. Sherman, Vice President of the United States, was chosen over him by a vote of twenty to fifteen. The colonel resented this action, and his friends accused the regular party leaders of sharp practice in stating that Pres. Taft favored the choice of Mr. Sherman. The President in a public letter, Aug. 22d, explained that he had asked the party leaders to consult Col. Roosevelt and his friends before taking action. Letters on both sides seem not to have been delivered when written. Col. Roosevelt's friends took the matter up throughout the State, and Barnes headed a lively opposition to Roosevelt.

When the Republican Convention met Sept. 27th, Roosevelt was elected temporary chairman by a small majority, and the Regulars were defeated. They thereupon threw upon the Rooseveltians the onus of nominating a candidate. A plan for putting Col. Roosevelt up went to pieces because of his statement that he would under no circumstances accept that nomination. His friends then drafted the platform, including a weak indorsement of the Payne-Aldrich tariff, and the direct primary which had been the original cause of the split. Their candidate, Henry L. Stimson, had been counsel for the government in important cases, but otherwise had not been in public life.

The "New Nationalism." — Meanwhile Col. Roosevelt threw himself into the whole national contest with the utmost vigor. While the New York controversy was going on he made a long trip, previously planned, through the West, speaking from one to ten times a day to great and enthusiastic audiences. Aug. 31st, at Ossawatomie, Kan., at a celebration nominally in honor of John Brown, he laid down what he called the platform of "New Nationalism" in seventeen planks. Seven of these relate to trusts and corporations, which he thought necessary, but he insisted that their transactions must be public, and that they must be supervised by a Federal agency, especially where they control the necessities of life. Three planks relate to finance, including a tariff commission, upon whose recommendations he believed "in revising one schedule at a time —a general revision of the tariff almost inevitably leads to log rolling." He favored also a graduated income tax. One plank spoke for the army and navy, two others for conservation, another for legislation favorable to labor, another against mob violence, another for such use of national power that "there must remain no neutral ground to serve as a refuge for lawbreakers"; and finally he came out for the direct primary, together with a corrupt-practices' act, and the right to recall elective officers. This platform, which might have been thought socialistic a few years ago, includes most of the points made by the progressive Republicans, and many which have been the war cries of Mr. Bryan and other Democratic statesmen, and goes far beyond the Chicago platform of 1908 and the messages of Pres. Taft.

Throughout his tour Col. Roosevelt paid his compliments to the great corporate interests which he believed were opposing both himself and the principles which he represented. He made speeches in Massachusetts, New Hampshire, Ohio, and several other states, up to the night before the elections, and canvassed the State of New York from end to end. In some states he urged the cause of personal friends who were insurgent candidates for Congress. With Dix, Baldwin, and Harmon, Democratic candidates for governor in New York, Connecticut, and Ohio, he entered into personal controversies.

Insurgents in the Campaign.—After Congress adjourned, and the fall campaign opened, insurgency, and the President's relation to his party had become more and more vital. Though there were alarming evidences of a disintegration of the party in New England and the middle states, the insurgents were mostly from Michigan and Iowa westward. Under the old system of party committees and delegate conventions, it would have been hard for the insurgents to establish before the election that they had a majority in states or congressional districts; but the direct primary, which brought about the coming of men like La Follette to the Senate, made it easier to appeal to the voters.

The insurgents had not a common body of principles, and had somewhat differed among themselves in the debates in Congress. In general they considered the Payne-Aldrich tariff unreasonably high, and insisted that it was not unrepublican to have voted against that tariff, to be in favor of modifying it, or to stand for a general lower level of the tariff. In Minnesota, Wisconsin, and other middle western states, there had long been a strong opposition to high tariff, and this view spread into other states. Conservation also played a great part, although in the Rocky Mountain and Pacific states, a considerable number of voters and public men were opposed to holding up the settlement and sale of the public lands.

A series of lively skirmishes came on over the nominations in Republican districts; Tawney, of Minnesota, chairman of the committee of appropriations, and one of the strong men of the House, was bowled out of the nomination in the primaries; Sen. Burrows, of Michigan, lost his opportunity of return to the Senate in the state primaries; many of the standpatters, especially Mr. Cannon, were easily renominated; but many standpat members were ousted before they could come to the test against a Democratic candidate.

Pres. Taft in the Campaign.—Amidst these signs of disaffection, it was impossible for the President to remain neutral, and his position was made more difficult by the campaigning of Mr. Roosevelt and his announcement of the policy of "new nationalism," which in part accorded with Pres. Taft's program of legislation, in part restated insurgent doctrine, and in part extended agitation into new fields. Efforts were made to bring about misunderstanding between the President and ex-President, but they remained friends, and neither of them expressed any public criticism of the other, or of his aims and policies. Col. Roosevelt took pains in some of his speeches to express his approbation of the administration.

ELECTION OF 1910

Into the election of Nov., 1910, the Democrats entered with high confidence. The by-elections of Foss, in Massachusetts, and Havens, in New York, both in strong Republican districts, seemed plain evidence of hostility to the Republican policies. The argument of high prices appealed to millions of voters and their wives, and was not silenced by the report of the Senate committee, or of a less partisan commission in Massachusetts, or the argument of Col. Roosevelt that the rise of prices was world wide, and not to be laid to any one statute. They could not but make capital also out of the unfavorable opinions on Republican leaders in Congress, openly expressed by the Insurgents. Cannonism thus became not only a local issue in the Republican Party, but also a national issue in the election.

The result of the election was a sweeping victory for the Democrats: In nine states, New York, New Jersey, Ohio, Indiana, Maine, West Virginia, Missouri, Nebraska and Montana, the Republicans lost the legislature, which was to elect a Senator; in South Dakota they gained a Senator, thereby reducing their number in the

Senate, after 1911, from 59 to 46; and raising the Democratic Senators from 33 to 38. If New Mexico and Arizona choose Democratic Senators, their strength in the Senate will rise to 42. It will therefore be in the power of three insurgent Senators, by combining with the Democrats, to secure amendments which the straight Republicans would not favor.

In the House the Democrats gained heavily, particularly in the middle states; only one Republican member from the city of New York surviving, and only one in Indiana. Fifty-eight Republican seats were lost to the Democrats, and 7 Democratic seats were captured by the Republicans; giving the Democrats 227 members in the sixty-second House; the Republicans 163 members, and the Socialists 1. Although the standpat leaders, Cannon, Payne, Dalzell, McCall, and others, were returned, the apparent Republican strength is much diminished by the success of the Progressives, who carried most of the western seats which were Republican at all. Under these circumstances it is impossible to read the Progressives out of the party, or to expect that the policy of the Republican Party can continue on old lines.

In the short session from Dec., 1910, to March 4, 1911, the membership is the same as in 1909–10, hence the same leaders of the Republican Party will appear in Congress; the insurgents will have only about the same number of votes—forty in the House; but legislation is bound to be influenced by the fact that the insurgents have carried so many Republican states and districts, and can no longer be looked upon as a faction. From Dec., 1911, to March, 1913, the President will have to contend with a Democratic House and a Senate in which Democrats and Republican insurgents together can make a majority.

The state elections were significant for bringing to the front, or strengthening the reputation of, several Democratic leaders: In Massachusetts, Eugene N. Foss, whose sole public career had been part of a term in Congress, was elected governor; in Connecticut, Judge Simeon E. Baldwin, retired from the chief justiceship on account of age, made a successful canvass; in New York John A. Dix was chosen by a plurality of 67,000; in New Jersey, Woodrow Wilson, for years president of Princeton University, and never before in politics, made a spirited campaign, and received a plurality of about 50,000; in Ohio, Gov. Harmon was reelected by about 100,000 plurality; in Pennsylvania, the Republican candidate, Tener, had a plurality of 20,000, the Democrats coming in below the Keystone or Reform Party; a fusion would infallibly have beaten the Republicans. The net result is that in 1911 the number of Republican governors will come down from 26 to 21, and the Democratic governors increase from 20 to 25—not counting Arizona and New Mexico. Colorado, Oregon, Wyoming, and Montana, far western states, all elected Democratic governors. The state legislatures, partly from the effect of hold-over Senators, and partly through the choice in Connecticut and other states of a Republican legislature alongside a Democratic governor, show 24 Republican and 22 Democratic.

Local and municipal elections were also much affected by the so-called "landslide."

One district in Wisconsin was carried by Victor L. Berger, the first out-and-out Socialist to appear in Congress.

THE STATES

During the year the number of states was presumptively raised from forty-six to forty-eight by the enabling act preceding the admission of the two southwestern territories of Arizona and New Mexico. The region called New Mexico, then an unorganized conquest, drew up, in 1850, a constitution and applied for admission to the Union, but has for sixty years continued a territory. In 1863 its enormous area was subdivided into two communities, neither of which, until recently, has had the population or the coherence necessary for statehood. A strong pressure was put upon Congress to admit them; and on June 16, 1906, Congress passed an act admitting them as the combined State of Arizona, provided both sections gave their consent by a popular vote. They both refused to come in on that basis. June 20, 1910, Congress gave way by a statute authorizing the erection of a State of New Mexico and a State of Arizona. Constitutional conventions were called in both states, and both conventions have submitted their work for popular approval. Should those constitutions find favor in the eyes of Congress, the territorial system in the continental mass of the United States, begun by the Northwest Ordinance of 1787, will have at last come to an end. (See VIII, *Territories and Dependencies.*)

New York.—The single state in which people throughout the Union have the liveliest interest is New York, both because of the commanding position of the Empire State and the remarkable character of Gov. Hughes. Following out his policy of previous years, the governor, during 1910, gave his assistance and moral force to the investigations in the New York legislature; he vetoed about 250 bills that passed both Houses, and cut out items to the amount of $5,000,000 from the appropriations. He became convinced that the State needed a direct primary law which would democratize the party organizations, and make easier the nomination of men who had not the recognized party leaders behind them, but, as has been set forth above, the regular Republicans defeated this measure in the face of the governor's earnest advocacy, reinforced by that of ex-Pres. Roosevelt. April 25, 1910, he was appointed a justice of the United States Supreme Court, and accepted, remaining in the governorship until Oct. 6th, when he resigned, and Horace White, the lieutenant governor, took his place. The nearly complete four years of Gov. Hughes's service have been full of contests with the legislature. In most cases he has forced that body to pass his bills—notably those which have led to the abolition of race-track gambling; but, irrespective of his appointment to the supreme bench, he announced that he should inevitably retire at the end of his second term.

THE SHADY SIDE OF PUBLIC LIFE

Political Corruption.—The year has been uncomfortably noteworthy for charges and convictions for bribery, corruption, and customs frauds. Jan. 18, 1910, Benn Conger, of the New York State Senate, authorized a public statement of charges which had previously been circulating in private that Senator Jotham P. Allds, who had just been elected president of the Senate, had solicited and received bribes for staving off legislation adverse to certain bridge companies. The Senate sat as a body to consider the charges, and on March 29th voted, forty to nine, that they were sustained, and Allds resigned to avoid expulsion. Conger also resigned.

While this trial was pending, a legislative investigation was begun, at the instance of the state insurance commissioner, into the methods used by representatives of the fire-insurance companies to stave off "strike bills" damaging to them. Testimony quickly showed that there had been a common agency of several of the companies, an assessment upon them for the expense of influencing votes, and a similar arrangement among some of the traction companies throughout the state.

May 24th, a committee was appointed to investigate the general subject of legislative corruption; and it was shown that several living legislators, besides some now dead, had accepted bribes in behalf of the Lyons Sugar Refining Company, the Street Railway Association, and other corporations. Damaging testimony came forward: one senator testified, Nov. 18th, that he had been offered $100,000 cash to vote for the bill against gambling on race tracks. Another witness testified that $500,000 was raised to defeat the measure. At the end of the year the committee was still engaged in its investigation; a report to the legislature may be expected early in 1911.

In Pittsburgh the search for unfaithful public servants took the form of a prosecution before the courts. March 21st, forty past and present councilmen were indicted for accepting bribes to influence their votes in choosing banks for deposits of city funds; some of the leading business men of the city appear to have paid large sums for this privilege for their banks. Several legislators and others were convicted and sent to jail, and the number of indictments rose to ninety-seven. The president of one of the principal banks received a jail sentence.

In Ohio, Gov. Harmon continued his investigations into the state departments, and M. A. Slater, former supervisor of state printing, was convicted of embezzlement; and a large number of others were indicted.

May 6th, three members of the Illinois legislature were indicted on the charge of taking bribes to vote for William Lorimer, elected United States Senator from Illinois in 1909. Several men made confession, and one of them, L. O. N. Browne, the Democratic leader of the House in 1909, was twice tried for bribery, but the jury did not convict.

The elections committee of the U. S. Senate reported that the number of votes which perhaps were corrupt was less than the margin by which Lorimer was elected, and therefore he ought to retain his seat.

In Chicago a committee of investigation from the Council, under the direction of Charles E. Merriam, professor in the University of Chicago and a reform member of the Council, brought in a report which led, on Jan. 7, 1910, to the indictment of various city officials and contractors. That the spirit of plunder was not confined to public bodies was shown by the discovery of enormous stealing in the Illinois Central Railroad. Aug. 13, 1910, several of the former officials of the road were put under arrest on the charge of systematic robbery in the repair of cars and other railroad property, the total amounting to over $4,000,000.

This list of the purchase and sale of public servants, to which many less notable instances might be added, at least gives proof of great public indignation, and there were several successful prosecutions. Legislative corruption in New York, especially under what was called the "Black Horse Cavalry," has long been known to exist, but the conviction of Allds is said to be the first that has ever been obtained from a house of the New York legislature; and the sugar cases showed the inflexible determination of the government to break up fraud, and the possibility of sending to prison even the employees and agents of the most powerful corporations. It was popularly believed that persons "higher up" had directed these schemes to defraud the government, though none were reached by prosecution.

On June 24th, Senator Gore of Oklahoma from his seat in the Senate declared that J. F. McMurray, counsel for the Choctaw Tribe, had tried by money inducements to get him to withdraw opposition to an arrangement for the sale of Choctaw lands, under which Gore was to receive about three million dollars as fees. No conclusive testimony was obtained.

ADMINISTRATION OF THE TARIFF

Administrative Machinery. — The methods of administration and collection of the tariff of the United States were improved and systematized by the administrative tariff act of 1890, with some amendments, especially in the tariff legislation of 1894 and 1897. Alongside these statutes, with their complicated system of determining the value of goods and the clauses of the tariff which specifically apply to them, run circulars of the Secretary of the Treasury, adjusting details and prescribing the duties of subordinates. Much, however, depends upon the personal supervision of the chief customs officers in each district, and especially of the Collector. A part of the machinery is a Board of General Appraisers, which has the final decision upon disputes over the value of imported goods. The board may also pass upon the classification, and thus on the rate of duty to be levied; but on this question there is an appeal to the federal courts.

In New York City, the largest port in the Union, in which is collected more than one half of the import duties, irregularities have frequently been discovered, particularly when the collectorship has been held as a political favor and the minor appointments made because of political services. By the application of civil service rules, the office has been relieved from the appointment of political heelers, but not from laxity of administration. Smuggling, undervaluations, and especially the bringing in of dutiable goods by arriving passengers, have steadily gone on. By the Dingley act of 1897, passengers were allowed to bring with them "wearing apparel, articles of personal adornment, toilet articles, and similar personal effects . . . necessary and appropriate for the wear and use of such persons, for the immediate purpose of the journey and present comfort and convenience." But even on such articles only a value of $100 is exempt from duty.

Reforms in the New York Custom House.—On March 5, 1909, William Loeb, Jr., previously private secretary, personal friend, and confidential adviser of Pres. Roosevelt, was appointed Collector of the Port of New York, and began at once to open up the administration of the port with regard to valuations, the actual levy and collection of duties, and the examination of passengers' baggage. He announced his intention of carrying out the law as it ran, and began by going into the efficiency records of the 2,300 employees, as a result of which more than 100 were dropped for the good of the service. Collector Loeb at once attacked the system of gratuities paid by steamship agents, in token of their obligations to the courtesy of customs employees; and he announced that any inspector accepting either gratuities or bribes would be criminally prosecuted. He applied his energies to the sleeper trunk fraud, which consisted in bringing in valuable goods in trunks which were not claimed when the passengers landed, but were afterwards quietly removed without reference to the inspectors. Some such trunks, when seized, were found to be filled with valuables. In some cases the owners were traced and prosecuted. Many travelers were convicted of understatement of goods purchased.

Weighing Frauds.—It appeared that it was the custom for lighters, having on board dutiable merchandise, particularly sugar, to lie unguarded, sometimes for several weeks, and this abuse was corrected. Collector Loeb attacked the weighing of dutiable goods, which was carried on by a combination of government weighers and checkers and weighers employed by the importers. In the previous administration suspicion had been aroused and Richard Parr had been detailed to secure evidence against the sugar companies. After three years' preparation the net was sprung. The collector entered criminal suits against both government and corporation employees, and also demanded payment for back duties fraudulently withheld.

The companies were unable to resist the proof that the weights had been systematically falsified, and could set up only the plea that zealous employees, anxious to make a showing of efficiency, had engineered those frauds without instructions from above. Rather than stand suit, which counsel advised them might establish a responsibility for as much as $6,000,000, the American Sugar Refining Company, in Apr., 1909, settled with the United States by paying $2,269,000. This example was followed by three other concerns—the Arbuckle Brothers, who paid $695,000; the National Sugar Refining Company paid $604,000; the Federal Sugar Refining Company paid $104,000. Richard Parr will eventually receive $100,000, under a statute allowing payment to the person who informs on such frauds.

Criminal Convictions.—In compromising the civil suits, the government reserved the right to enter criminal prosecution, but sufficient evidence had not yet been obtained against the corporations, or their officers, to warrant further suits. It was otherwise with the employees of the government and the companies.

Nov. 12, 1909, indictments were brought against Oliver Spitzer, the company's dock superintendent, and five company weighers, and it was proved that many of the scales were so arranged that by pressing a spring they would register less than the actual weight.

Regular payment to government servants by the sugar company through its employees on the dock was clearly proved, and eventually five of the employees of the sugar company were convicted, Dec. 17, 1909. Meanwhile, indictments were entered against some of the superintendents and other responsible employees of the trust. It was shown that the company was continuing the wages of employees then under conviction. The trial of James F. Bendernagle, formerly cashier of the trust, resulted in a disagreement of the jury in two successive trials. Charles R. Heike and Ernest W. Gerbracht, superintendent of one of the sugar refineries, were convicted and sent to prison.

Mayor Gaynor.—The mayoralty of New York has become an office of national importance. Judge W. J. Gaynor, elected after a heated contest, took office Jan. 1, 1910. He was singularly free from political pledges of any kind, and set himself to improve the public service without fear or favor. As usual, there were many shifts in the headships of the executive departments, but the mayor retained William F. Baker as commissioner of police. He kept a guiding hand, however, over that part of the public service; and interested himself in impressing on the police force humaner treatment of suspects, criminals, and the general public.

Aug. 9, 1910, Mayor Gaynor, on board a steamer about to sail for Europe, was shot by a man named Gallagher who had been discharged from the city service for inefficiency. In a remarkable private letter from Mayor Gaynor which appeared in the public press after his recovery, he laid the responsibility for this attempt upon his life on the newspapers which had made it their business to excite ill will against him.

During his illness, John P. Mitchell, president of the board of aldermen and acting mayor, got into a controversy with Commissioner Baker over the question of the suppression of gambling and other vices; and the mayor removed Baker and appointed James C. Cropsey on Oct. 20th. There was a succession of charges and defenses in the office of Lawrence Gresser, president of the Borough of Queens, within whose jurisdiction irregularity, if not malfeasance in office, was detected. Early in his administration, the mayor also reorganized the commission on the Catskill water supply, because of what he thought excessive awards for land damages.

Palisade Park Improvement.—Several projects for the improvement of the city of New York have been started during the year. Jan. 5, 1910, Gov. Hughes announced that Mrs. Harriman had offered to the state a tract of land on the west side of the Hudson, along the Palisades, as a gift for the benefit of the state, and particularly of the near-by city of New York; other owners of land in the neighborhood joined in the gift, which is valued at several million dollars. As a part of the transaction, a proposition that the state appropriate $2,500,000 to this enterprise, was put on the ballot in Nov., and was adopted by a majority of about 60,000, notwithstanding the opposition of the up-state vote.

Rapid Transit in New York.—The improvement of transit in New York is a matter of national concern, partly because it is the metropolis of the nation, visited by hundreds of thousands of people; partly because of the influence of the New York system on other cities. At the end of Mayor McClellan's administration, money was voted for a subway in Brooklyn, but large improvements in Manhattan were held back because the outstanding loans nearly approached the statutory indebtedness of the city. May 11th Gov. Hughes signed a bill under which dock and water bonds—which are issued on productive property—were released from this limitation. The expenditure of $60,000,000 was authorized for subways in the Borough of Manhattan and the State Transit Commission for New York City prepared plans for a system parallel with, but not a part of the present Interborough Subway. As no bids were received for constructing it with private capital, on the terms proposed by the commission, it invited tenders for construction with the aid of the credit of the city, and on Oct. 27th bids were submitted for various sections, the lowest of which put together counted up to about $85,000,000. An agitation against this method of building subways was at once begun, and a counter agitation in favor.

The project needed the approval of the Board of Estimate and Apportionment, in which Mayor Gaynor has three votes, and as several of the members, including the mayor, were in doubt on the question, the fate of this effort to solve the problem was still undecided when Mr. McAdoo, president of the Hudson Terminal Tube System, made a proposition to the effect that, if the city would construct certain specified portions of the Triborough system, at an expense estimated at a hundred million, his company would spend fifty million in equipment and would divide the profits with the city upon liberal terms. This brought out an offer from the Interborough Company, which had declined to bid for construction except with private capital. They offered to put about $75,000,000 into construction if the city would spend $50,000,000, the amount to be expended on extensions in connection with the present Triborough route. Mr. McAdoo, after making some amendments to his original proposition, on Dec. 15th withdrew it, on the ground that his offer was conditioned on the city's adopting a system of municipal ownership of the Triborough line, and that he could not undertake to bid against a company which was making its offers on the basis of noncompetitive service.

The Public Service Commission in a letter to the Board of Estimate and Apportionment expresses its conviction that the acceptance of the offer of the Interborough Company, provided certain modifications can be agreed upon, would be for the best interests of the city. For this conclusion the commission gives several reasons:

First, the Interborough agrees to operate future extensions to the system as they may be built by the city.

Second, the city would have the power, after the lapse of ten years, to take over the extensions now to be built, and, by constructing a few connecting links, have a distinct and comprehensive subway system.

Third, construction can be begun at once, and relief obtained most quickly.

Fourth, the terms of operation of the present subway and the proposed extensions can be so arranged that the entire system will revert to the city at the same time.

Fifth, the city will have to provide only $53,000,000, as against $100,000,000 or more under any other plan.

Sixth, there will be a single five-cent fare and free transfers over the whole system.

Seventh, the Pennsylvania Railroad Station will be connected with the main subway system of the city.

Eighth, the plan embraces two important connections of the elevated railway with the Borough of Queens, one by means of the Steinway Tunnel and the other by the Queensborough Bridge.

The Interborough proposition must now be acted upon by the Board of Estimate and Apportionment, for no subways can be built in the city without the approval of that body, which must vote the necessary money.

JUDICIAL AND ADMINISTRATIVE DECISIONS

Antitrust Suits and Proceedings.—The year 1910 has been prolific of prosecutions, suits, and judicial decisions on public questions of significance. When Pres. Taft came into office a suit was pending—begun in Feb., 1908, for dissolving the merger of the Union Pacific and Southern Pacific railroads. After consultation with the heads of the company, on Jan. 18th the President decided to enter suits against the Beef Trust on March 21st, and on Sept. 12th ten officials of the trust were indicted by the Federal grand jury at Chicago for conspiracy in restraint of interstate trade. Down to the end of the year no decisions had been reached in either proceeding. Renewed efforts were made to prosecute or dissolve the Standard Oil Company. The case pending before the Supreme Court was argued, but on April 11th the court called for a rearguing of this and the suit against the Tobacco Trust, and in Oct. the rehearing was again postponed until Jan., 1911, when the court will have a full bench. Meanwhile the court decided against the contention that each shipment contrary to the interstate commerce was a separate offense, and the former judgment of Judge Landis for $31,000,000 against the Standard Oil Company thereby ceased to become effective.

Court of Commerce.—One of the successes of the administration was the passage (June 18th) of an act for a Court of Commerce, similar in principle to the Customs Court. It is expected that the judges will be experts in the law and custom of transportation; and that cases will be more speedily reached than if brought before the ordinary circuit courts. In addition, the Court of Commerce will furnish a speedy means of testing the decisions and findings of the Interstate Commerce Commission, so far as they are subject to a revision by the regular courts. Both these courts have been strongly opposed, partly because they may be too active to suit some litigants, and partly because it is a disturbance of the principle that cases of all kinds ought to go through the same legal procedure, and that an expert court is an anomaly in American jurisprudence.

Interstate Commerce Commission.—The Interstate Commerce Commission made several important decisions: April 10th it held that the rates for upper berths on Pullman cars should, under some circumstances, be less than for lower berths, which is the first significant decision by the commission on Pullman car transportation. June 29th, immediately after the making of this ruling, the commission ordered a suspension of a rate raise which had been announced by the railroads, and at once set on foot an investigation of the testimony on the necessity of those increases. Sept. 5th the President appointed a commission on the issue of stocks and bonds, with intent to investigate the question of overcapitalization. Pres. Hadley, of Yale, was made chairman of this commission.

See also XXXIV, *Chronology and Necrology.*

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FOREIGN OCCURRENCES IN 1910

PROGRESS OF DEMOCRATIC GOVERNMENT

The year 1910, like several preceding years, has been remarkable for the advance it has witnessed in the movement for the further development of representative government throughout the world. The establishment of a republic in Portugal has been its most striking feature. Hardly less notable has been the granting of provincial assemblies in China, followed by the establishment of a national senate, one half elective, and the definite promise that this will be immediately followed by the establishment of the national assembly, heretofore promised for the year 1917. In Switzerland the movement for a stronger Federal Government continues; it made great advances in 1908, by amendments placing the control of water powers under Federal jurisdiction, and increasing Federal control over the manufacture and sale of alcoholic liquors. In 1910 the Federal Council recommended an amendment extending Federal jurisdiction over the automobile traffic and aërial navigation, and another amendment to extend proportional representation to the election of the Federal Council is pending. In the Netherlands a commission has reported in favor of the introduction of proportional representation and the extension of political rights to women. In Norway the right of suffrage was extended to women in 1907—a right first exercised in 1909—when it is estimated that fifty per cent of the qualified female voters cast ballots. Constitutional changes adopted in 1909 in Sweden liberalized the basis of suffrage in respect to both branches of the Riksdag, and otherwise modernized the forms of government organization. All members of the Lower House are now elected directly, and universal male suffrage for persons twenty-four years of age replaces a property qualification. Amendments are now sought extending the suffrage to women, and reducing the age limit to twenty-one years. Recent legislation in Denmark confers the suffrage upon women twenty-five years old, and nearly doubles the number of persons qualified to vote in local elections. In France proportional representation and other electoral reforms are a part of the program of M. Briand, the prime minister. In many of the German states striking electoral changes have gone into effect in the last five years, and the movement for ministerial responsibility in the empire is gathering strength. The government also announces that in the near future proposals will be made granting larger autonomy to Alsace-Lorraine. Popular demands for the enlargement of the electoral and other constitutional reforms led to the constitutional convention in Greece which has recently adjourned with scenes of great disorder. The demand for electoral reform in Hungary continues, amid episodes of constant turmoil chiefly growing out of dissatisfaction with existing relations with Austria. The revised constitution of Turkey went into effect in August, 1909. It imposes certain guarantees as to individual rights, and otherwise strengthens parliamentary institutions; but the pathway of the Young Turk movement is encumbered with many difficulties. The political agitation in India continues, notwithstanding the act of the British Parliament of 1909, introducing elective members into the legislative councils of the governor general and of the several provinces. No changes in governmental organization have been effected in Egypt in the last two years, and the agitation of the Nationalist Party there continues, and apparently increases. A measure pending in the Russian Duma practically destroys the autonomy of Finland, which it has enjoyed since its annexation to the Russian Empire in 1809.

GREAT BRITAIN

MARCUS BENJAMIN

By far the most important event in Great Britain during the year was the death of the king. Albert Edward was born in Buckingham Palace, London, Nov. 9, 1841; married Princess Alexandra of Denmark, March 10, 1863; succeeded to the throne on the death of his mother, Queen Victoria, Jan. 22, 1901, taking the title of Edward VII, and died in Buckingham Palace, May 6, 1910. On his accession, to quote his son and successor: "Our beloved king declared that as long as there was health in his body he would work for the good and amelioration of his people." So for nine years he ruled, gaining the plaudits of the world, and recognition as one of the wisest, most tactful, and most humane rulers the world has ever seen. He was accepted as the "first statesman of his day," and became conspicuous as "a great ambassador for peace." During his lifetime he visited all of his dominions, an experience never before enjoyed by a British sovereign, and thus came in contact with his many subjects of various races, who learned to recognize and appreciate his direct interest in their welfare. His reign was the triumph of persuasiveness; he gave hope to the Boers in South Africa; he restored the French alliance, and brought about the Anglo-Russian agreement. Italy, Spain, and Portugal were his friends; and had he lived longer, it is the belief of those most familiar with his character, that Germany would have yielded to his influence. He will pass into history as Edward the Peacemaker. His last years were devoted to the settling of the controversy with the House of Lords, and his death was accepted as the "Truce of God," for it temporarily suspended the constitutional struggle.

When the end came, besides his son and successor, one emperor and seven kings, in addition to former Pres. Roosevelt, followed his remains on their last journey. The ominous hush of sorrow pervaded the streets of London as the funeral cortege took its way from Westminster to Windsor; and in Canada, from sea to sea all railway service was stopped during the funeral exercises, while even the Hindus and Mohammedans, with their black banners, gathered in the streets of Calcutta to do reverence to the memory of their emperor. He died in harness, "laboring to the last with that hearty, winning zest of his in life and men and affairs still unimpaired, at the height of the popularity that was so humanly dear to him, with his work and fame as one of the two foremost figures in European politics established unassailably." He was regretted by the masses in all countries, and lamented bitterly by the poorest in his own.

The British Budget.—The presentation of the budget, adopted by the House of Commons and rejected by the House of Lords, has given rise to what has been called a "constitutional crisis" in Great Britain. An explanation concerning the public finances of that country is desirable to make the situation clear.

The great wars with France in the latter part of the eighteenth century, that culminated at Waterloo, cost £831,500,000. The expense of the Crimean War was also very large, and it is estimated that the war with the Boers cost over £250,000,000. These enormous sums of money were raised in part by taxation, and in part by increasing the national debt, which in 1792 was only £237,000,000, as compared with £789,000,000 in 1906. Thus the interest charges alone are more than three times what they were before the three wars mentioned. Two other causes have materially affected the national revenue; the increased cost of government, which, for comparison, was in 1841, £53,750,000, while in 1905–06 it was £142,032,000; and the military expenditures, which were only £15,500,000 in 1841, for both army and navy, while the naval estimates alone for 1910–11 were £40,000,000. The enormous expense of the Boer War was met by the suspension of the sinking fund, by taxation, and by borrowing, and yet during this period between four and five millions of pounds were added to the interest on the fixed and floating debt, and over four times that amount to the cost of armaments.

With the restoration of peace came a demand for a remission of the war taxes; but the increased expense of government, as well as the growing cost of armaments, made a reduction an impossibility. In the budget for 1903 the income tax was lowered, and certain duties repealed or reduced, but in 1904 it became necessary to restore most of these items. At a time when trade was depressed, unemployment rife, poverty increasing, and social reform at a standstill, this act, practically necessary, largely alienated the great tax-paying middle classes, and the Balfour ministry was overwhelmingly defeated in the election of Jan., 1906. The new government first under Sir Henry Campbell-Bannerman and later under Herbert Henry Asquith, found itself pledged to undertake: (1) The halting of public extravagance and the effecting of substantial retrenchment in national expenditures; (2) the remission of as much as possible of the £24,000,000 of Unionist taxation still on the statute books; (3) the reform of the discredited army; (4) the undertaking of an elaborate program of social improvement, comprising old-age pensions, the relief of unemployment, the overhauling of the liquor traffic, and the liberation of education from ecclesiastical entanglements; and (5) the unequivocal maintenance of free trade.

Since 1906 the Liberal Government has succeeded in lowering the debt by nearly £47,000,000, thereby effecting an annual interest saving of about £1,125,000. But with public expenditures they have been less successful, as larger outlays for the navy, the old-age pensions, and the decreasing of the debt, have compelled a persistent increase of the budget, until that for 1909–10 called for £165,000,000, nearly £25,000,000 in excess of that called for by the last budget formulated by the Balfour administration. Essentially, therefore, the condition that confronted the British Government when Mr. Lloyd-George, on April 29, 1909, presented his historic budget, was a deficit of £16,500,000. The plan presented in his budget to meet the deficiency involved the following changes: (1) Customs, an increase of 8d. a pound on tobacco and of 3s. 9d. a gallon on potable spirits, with a new duty of 3d. a gallon on motor spirits (estimated to yield, in all, in 1909–10, £2,640,000); (2) excise spirit duties imposed as under customs, an increase on motor car licenses, and a higher scale of duties on all grades of liquor licenses (with an estimated aggregate yield this year of £2,760,000); (3) estate and death duties, an increase from one to two per cent in the settlement estate duty, together with a sweeping rearrangement of death duties so that the rates hitherto prevailing shall be applied to correspondingly smaller estates (to yield at present £2,850,000, and eventually £6,320,000); (4) income tax, the tax on earned incomes up to £3,000 to continue unchanged, but on all unearned incomes, and on earned incomes of more than £3,000, the rate to be raised from 1s. to 1s. 2d. in the pound; also a graduated super tax of 6d. in the pound on incomes over £5,000 (to yield £3,500,000, and eventually £6,300,000); (5) land taxes, comprising (*a*) a general increment value duty of twenty per cent, payable at the owner's death or when, by sale or lease, he actually realizes the unearned increment; (*b*) a ten per cent reversion duty upon any benefit accruing to a lessor from the termination of a lease; (*c*) a tax of 1s. in the pound on the capital value of undeveloped land (agricultural land being wholly exempt), and (*d*) a similar duty on land containing minerals (the four to yield but £500,000 in 1909–10, but ultimately somewhat more); and (6) stamp taxes, comprising duties on conveyances or transfers of property, on securities transferable by delivery, and on contract notes (to yield at present £650,000, and subsequently £1,450,000).

This budget passed the Commons, Nov. 4, by a vote of 379 to 149, and four days later had its first reading in the Lords, who on Nov. 30 rejected it by a majority of 275 "until it has been submitted to the judgment of the country." Dissolution followed, and the ordering of a new election. Meanwhile the finances of the nation were in an anomalous state. The resolutions of the Commons under which, as has long been customary in such cases, the new imposts were collected in anticipation of the final adoption of the budget, had failed for the first time on record to be confirmed by the subsequent action of the two houses. Strictly speaking, the imposts, having fallen short of legalization, could no longer be collected, and payers of the revenues in question were entitled to restitution. The native good sense of the British people, however, saved the day, and by tacit understanding the imposts continued to be paid, pending the eventual adjustment of the situation.

The matter having been referred to the country, a previous Liberal majority of 114 was swept away, but the Liberal party was continued in power by the combination with the Irish and Labor vote.

Under these circumstances a ministerial scheme was proposed for dealing with the House of Lords, through which the Peers were to be deprived of all such powers in finance legislation as other second chambers possess; and the statutory duration of Parliaments was to be reduced to a maximum of five years. This condition of affairs naturally gave rise to considerable discussion, and pressure was brought to bear upon the late king to make 500 new peers for the purpose of crushing the existing opposition of the House of Lords. At this critical stage King Edward died, and the controversy was suspended "by the Truce of God."

At the suggestion of King George V, a conference of the leaders of the government and the opposition was held to consider a possible compromise on the question of the House of Lords.

Eight party leaders, Mr. Asquith, Lord Crewe, Mr. Lloyd George, and Mr. Birrell for the Liberals, and Mr. Balfour, Lord Lansdowne, Mr. Austen Chamberlain, and Lord Cawdor for the Unionists, met June 17, with the hope of agreeing upon some plan to meet the emergency. After holding eleven meetings the conference was adjourned on July 30, when Mr. Asquith announced that although agreement had not been arrived at, those conferring felt that it was not only desirable, but necessary to continue the meetings in the autumn. After an interval the meetings were resumed on Oct. 11, and ten additional sessions were held, after which it was announced that the conference had failed to reach agreement on any point.

The government plan for the reform of the House of Lords was set forth in the veto resolutions and the Parliament bill adopted April 14, as follows:

> It is intended to substitute for the House of Lords as at present constituted a second chamber on a popular instead of hereditary basis, but as such substitution cannot be immediately brought into operation the existing powers of the House are to be restricted.
>
> The House of Lords is to be denied the power of rejecting or amending a money bill. A measure shall be considered a money bill which in the opinion of the Speaker of the House of Commons contains only provisions dealing with all or any of the following subjects, namely: The imposition, repeal, remission, alteration, or regulation of taxation; charges on the Consolidated Fund or the provision of money by Parliament; Supply; the appropriation, control, or regulation of public money; the raising or guarantee of any loan, or the repayment thereof; or matters incidental to those subjects or any of them.
>
> When any measure other than a money bill has passed the Commons in three successive sessions it shall become law, notwithstanding its rejection or amendment by the Lords, provided that at least two years have elapsed since the introduction of the bill into the House of Commons and the date on which it passes that house for the third time.
>
> The duration of Parliament is to be limited to five years.

The attitude of the Lords, on the other hand, was set forth in a series of resolutions offered by Lord Rosebery and adopted, as follows:

> That a strong and efficient second chamber is not merely an integral part of the British Constitution, but is necessary to the well-being of the state and to the balance of Parliament.
>
> That such a chamber can best be obtained by the reform and reconstitution of the House of Lords.

The third resolution, which, on a division, was carried by 175 to 17, was in these terms:

> That a necessary preliminary of such reform and reconstitution is the acceptance of the principle that the possession of a peerage should no longer of itself give the right to sit and vote in the House of Lords.

In Nov., Lord Rosebery's further resolutions, providing for the reorganizing of the Lords, were adopted without division by that body except the one dealing with the tenure of seats therein, which was withdrawn. The resolutions embody the following program:

That the House of Lords shall consist of Lords of Parliament—a part chosen by the whole body of hereditary peers from among themselves and by nomination by the Crown; secondly, those sitting by virtue of their offices and qualifications held by them; and finally, a certain number chosen from outside.

Also that the term of tenure of all Lords of Parliament shall be the same except in the case of those sitting *ex-officio*, who should sit only so long as they held the office by reason of which they sat. This was the resolution that was withdrawn.

Lord Rosebery said he believed that on these principles it would be possible to reform the upper chamber, to a large extent solve the constitutional problem and maintain the ancient constitution of the country without the convulsion incident to a general election.

This proposition was further elaborated in Lord Lansdowne's resolutions, adopted by the Lords early in November, as follows:

> This house is to be reconstituted and reduced in numbers in accordance with the recent resolutions passed by it.
>
> If a difference arises between the two houses with regard to any bill other than a money bill in two successive sessions and within an interval of not less than one year, and such difference cannot be adjusted by any other means, it shall be settled in a joint sitting composed of members of the two houses; provided that if the difference relates to a matter which is of great gravity and has not been adequately submitted to the judgment of the people, it shall not be referred to a joint sitting, but shall be submitted for decision to the electors by referendum;
>
> The Lords are prepared to forego their constitutional right to reject or amend money bills which are purely financial in character; provided that effectual provision is made against tacking, and provided that if any question arises as to any bill or any provision thereof, that question shall be referred to a joint committee of both houses, with the speaker of the House of Commons as chairman, who shall have a casting vote only. If the committee hold that the bill and the provisions in question are not purely financial in character, they shall be dealt with forthwith in a joint sitting of the two houses.

On Nov. 18 Prime Minister Asquith announced in the Commons that the government had advised his Majesty to dissolve Parliament on Nov. 28. He also stated that the "essential parts" of the finance bill would be proceeded with, that if the government were in a position to do so they would introduce a bill for the payment of members next year, and that the forthcoming election would be on the old register. Dissolution accordingly took place on the date named, after a ten months' existence, the shortest Parliament since Mr. Gladstone's home rule Parliament twenty-five years ago. Writs were immediately issued for the new elections, which began Dec. 2 and closed Dec. 19. While the election was filled with excitement there was a general falling off in the votes cast, and, to the surprise of everybody, but slight change in the alignment of parties. The new House of Commons is made up as follows:

> Government coalition: Liberals, 272; Laborites, 43; Nationalists, 73; Independent Nationalists, 11. Total, 398.
>
> Opposition: Unionists, 271.

The new Parliament will meet Feb. 6, 1911.

Incidental to the canvass was a proposal by Mr. Balfour, the leader of the Unionist opposition, that the referendum be employed for the settlement of grave constitutional questions. He particularly proposed that the whole question of tariff reform—meaning the return of Great Britain to protective duties—should be so determined. That this proposition did not meet with popular favor was made evident by the elections; and many of his own party openly repudiated it. That Great Britain is passing through a grave constitutional crisis is apparent; and the elections have by no means determined its ultimate outcome.

The New Budget.—This year—i. e., 1910–11, Mr. Lloyd-George's budget presented the following estimates: Revenue, £199,791,000, which it is proposed shall be collected from the following sources—customs, £32,095,000; excise, £34,270,000; death duties, £25,650,000; stamps, £9,600,000; land tax and house duty, £2,690,000; property and income tax, £37,550,000; land value duties, £600,000; postal, telegraph, and telephone services, £23,800,000; crown lands, £480,000; Suez Canal shares and sundry loans, £1,060,000; miscellaneous, £1,850,000. The expenditures were estimated at £198,930,000. In presenting the budget Mr. Lloyd-George defended the increased tax on whisky by showing that when the tax was increased, drunkenness decreased. Both in Scotland and Ireland reports of reductions in drunkenness varying from thirty-five to seventy per cent were received. Also, forecasting future events, he said the government saw their way to begin next year a great national scheme of insurance against unemployment and invalidity. Much satisfaction was felt at the absence of new taxation.

THE BRITISH DEPENDENCIES

S. N. D. North

CANADA

The Dominion of Canada has witnessed during the year a continuation and acceleration of the remarkable development of the past decade — more striking, perhaps, than has appeared in any other country. It has been characterized by manifestations of increasing loyalty to the mother country, and by further steps to establish economic independence of the United States—two ends clearly stimulated by the Imperial conferences held in London in 1907 and 1909, in which plans for the closer federation of the Empire for military and naval defense and for more effective economic coöperation, were outlined and accepted. The cruiser *Niobe*, the first ship of the new Canadian navy, arrived from England at Halifax Oct. 17th and was received with great demonstrations. July 26th bids were opened for the construction of the first Canadian war ship on the Pacific. Like the *Niobe*, it is to be a cruiser of the Bristol type.

The growth of the Dominion appears in all lines of industry and energy, more particularly in the rapid opening up of the northwestern provinces, with their vast potentialities for wheat production. The definite settlement of this new country has invited a stream of immigrants, large numbers of whom have come from the northwest sections of the United States. In 1909 the immigration reached 184,281, the largest in the history of the Dominion, and it will greatly exceed this number in 1910. The government estimate of the total population in 1910 is 7,489,781. To encourage this immigration and to provide outlets for the agricultural products of the Northwest two great transcontinental railroad systems, in addition to the Northern Pacific, have been pushed forward with remarkable energy, made possible by large Dominion loans, ninety per cent of which have been taken in Great Britain. The Canadian Northern is constructing a web of branch lines in Manitoba, Alberta, and Saskatchewan which bring the wheat fields of these provinces to tide water. Oct. 19th the Grand Trunk Pacific concluded an agreement with the contractors for the National Transcontinental line from Winnipeg to Superior Junction, whereby the company takes over this section of the government line, thereby completing its trackage from western Canada to the Atlantic seaboard. An official statement issued Dec. 16 for the year ending June 30, 1910, shows that the railway mileage increased from 24,104 in 1909 to 24,731 in 1910, an addition of 627 miles. Of this increase 519 miles were in the four western provinces. These figures do not include mileage of the Grand Trunk Pacific, which is officially regarded as "under construction," although over 1,000 miles were in actual operation during 1910. It is estimated that 4,500 miles of railway were under construction on June 30 last. During the year $101,816,271 was added to capital liability, bringing the total up to $1,410,297,687, of which $687,557,387 was represented in stocks and $722,740,300 in bonds. The actual outstanding liability on June 30 last, after eliminating duplication, was equal to $52,361 per mile of line. Cash subsidies during the year amounted to $1,789,723, bringing up the total to $146,932,180 by the Dominion, $35,837,060 by the provinces, and $17,983,823 by municipalities. In addition, 55,292,321 acres of land have been granted, of which 32,040,378 were alienated by the Dominion. The guarantee to June 30 amounted to $127,336,357. The Canadian railways carried 85,894,575 passengers and 74,482,866 tons of freight, an increase over 1909 of 3,211,267 passengers, and 7,640,608 tons of freight. The average passenger journey and average freight haul in Canada are the longest in the world. The gross railroad earnings to June 30, 1910, were $173,956,217, a gain of $28,899,881 over 1909, or 19.9 per cent. Operating expenses amounted to $120,405,440, an increase of $15,805,356. The net earnings were $53,550,777, an increase of 32.3 per cent over the increase of the preceding year.

In connection with the Canadian Pacific Railroad a line of Pacific steamers, subsidized by both the Imperial and Dominion Governments, has brought Montreal and Yokohama within eighteen days of each other. A monthly steam service has been established between Australia and British Columbia, for which the Dominion Government gives a subsidy of £37,000 annually and the Australian Commonwealth a subsidy of £27,600. In connection with the Canadian-Northern Railway, the Royal Line of steamships, plying between Bristol and Montreal, has been established. A proposal to subsidize an improved fast through service from Great Britain to Australia and New Zealand, by way of Canada, known as the "All Red Route," first made by Sir Wilfred Laurier at the Imperial conference in 1907, and contemplating a fleet which can make the trip from England to Australia in three weeks' time, or about twenty-one knots, is now under consideration by a committee of the Imperial Government.

All official statistics confirm the development which is following the growth of these transportation systems. On Dec. 31, 1909, Canadian bank deposits equaled $835,438,910, an increase of more than 100 per cent in ten years. The Dominion savings banks in 1910 show deposits to the amount of $14,677,872; and the post office savings banks deposits of $43,586,357, with 148,893 open accounts. The following table is interesting as showing the rapid increase in the cost of the Dominion Government:

AGGREGATE EXPENDITURE OF CANADA.

Fiscal Year.	Expenditure Chargeable to Consolidated Fund.	Expenditure Chargeable to Capital.	Expenditure for Railway Subsidies.	Other Charges.	Total Expenditure.
1900	$42,975,279	$7,468,843	$ 725,720	$1,547,624	$52,717,466
1905	63,319,683	11,933,492	1,275,630	2,275,334	78,804,139
1908	76,641,452	30,429,907	2,037,629	3,469,692	112,578,680
1909	84,064,233	42,593,167	1,785,887	4,998,237	133,441,524
1910	79,411,747	29,756,353	2,048,097	4,179,577	115,395,774

The total debt of the Dominion at the close of the last fiscal year, March 31, 1910, was $470,663,046, against which were sinking fund and other assets of $134,394,500; the interest on debt account was $13,098,161. In 1900 the total debt of the Dominion was $346,206,980.

In view of the remarkable growth of Canadian commerce, particularly with the United States, and the pending negotiations for some kind of a reciprocity treaty between the two countries, it is important to show this growth for the last decade, as distributed between the United States, Great Britain, and other countries. The figures of exports and imports are supplied by the courtesy of Hon. Archibald Blue, chief of the census and statistics office at Ottawa.

CANADIAN TRADE AND COMMERCE

Exports

Fiscal Years.	Great Britain.	United States.	Other Countries.	Totals.
1900	$96,562,875	$52,534,977	$14,412,938	$163,510,790
1905	97,114,867	70,426,765	23,313,314	190,854,946
1908	126,194,124	90,814,871	29,951,973	246,960,968
1909	126,384,724	85,334,806	30,884,054	242,603,584
1910	139,482,945	104,199,675	35,564,951	279,247,551

Imports, Exclusive of Coin and Bullion

Fiscal Years.	From Great Britain.			From United States.		
	Dutiable.	Free.	Duties Collected.	Dutiable.	Free.	Duties Collected.
1900	$31,561,756	$12,718,227	$8,074,541	$53,897,561	$48,182,616	$13,491,873
1905	45,099,527	15,243,177	11,171,010	78,797,440	73,634,186	20,580,302
1908	71,212,207	23,205,107	17,265,293	110,361,367	94,287,518	27,132,543
1909	52,219,881	18,462,220	13,449,342	90,584,507	79,471,671	22,526,807
1910	71,822,941	23,513,486	18,032,629	118,834,173	98,668,242	29,515,836

The total imports of 1909–10 were valued at $369,815,427, of which $142,551,081 were free of duties. The total duties collected on imports in 1909–10 were $61,024,239.

The attitude of the Dominion Government toward reciprocity with the United States was indicated in a speech of Sir Wilfred Laurier, the premier, at Montreal, in Sept., in which he said:

> I believe it is possible to make a treaty with the United States which will not only be of great advantage to us, but equally so to the United States, and I would not have a treaty which was not at least equally profitable to the one as to the other.

In an earlier speech at Nelson he declared:

> We are asked on either hand by different interests for free trade and protection. It will be our aim to evolve a tariff calculated to benefit the whole country. The cardinal feature and outstanding principle of the tariff is the British preference, and so long as we stay in office it will remain. It is not the policy of the Canadian Government to ask Great Britain to change her fiscal policy by an iota. We make our own interests, so with Great Britain. The loyalty of Canada to the British Empire is not dependent on any tariff relations.

In numerous speeches the premier reiterated his personal devotion to the principle of free trade, which he declared to be "the ideal fiscal system for the world."

Negotiations looking to a reciprocity treaty between Canada and the United States were begun at Ottawa in Nov., and will be continued from time to time. Any report upon which the commissioners may agree will have to be submitted to both houses of Congress and to the Dominion Parliament.

Canadian Legislation.—The second session of the eleventh Parliament of the Dominion of Canada was held at Ottawa from Nov. 11, 1909, to May 4, 1910, and resulted in the passing of 177 measures, of which sixty-two were public general acts.

Among the public general acts the following are of chief interest. In Schedule A of the Appropriation Act No. 1 (Chapter I), a grant of $50,000 was made in aid of sufferers from the floods in France. By Chapter VII, sums, not exceeding $12,000 for the first year and of less amounts yearly until 1915. when the amount must not exceed $5,000, are granted to assist in maintaining an independent and efficient service of telegraphic news from Great Britain for publication in the Canadian press.

The Combines Investigation Act (Chapter IX), provides for the investigation of combines, monopolies, trusts, and mergers. Where combines detrimental to the interests of producers or consumers are proved to exist, import duties may be reduced or removed and patents may be revoked. Persons guilty of defenses against the act are rendered liable to heavy penalties.

Chapter XIII brings the drivers of automobiles or motor vehicles within the operation of the criminal code when guilty of causing injury by furious driving or other willful misconduct, and renders them liable to fine or imprisonment for failure to stop after the occurrence of an accident.

The Currency Act (Chapter XIV), deals with the value and currency of coins minted at the Ottawa branch of the Royal Mint; the act replaces similar legislation of 1906. By Chapter XVI the import duties payable under the general tariff for thirteen items are reduced in amount as from March 31, 1910, these reductions being made by Canada in connection with an understanding arrived at with the Government of the United States as to the operation of the Payne-Aldrich tariff of 1909.

Chapter XXVII, an act of eighty-two sections, repeals the immigration laws previously in force, and prescribes the conditions under which immigrants may enter Canada. It contains strict provisions designed to exclude undesirable persons, and empowers the governor in council to issue regulations prescribing the minimum amount of money that must be possessed by immigrants on landing.

The Destructive Insect and Pest Act (Chapter XXXI), empowers the governor in council to make regulations against the introduction into Canada, or the spreading therein, of any insect, pest, or disease destructive to vegetation.

The Insurance Act (Chapter XXXII), consisting of 188 sections and a schedule of seven forms, deals comprehensively with insurance in Canada in the light of recent experience and events. Previous insurance legislation is repealed.

Another important measure provides for the creation of a Canadian navy. The Naval Service Act (Chapter XLIII), establishes a naval service department under the minister of marine and fisheries and provides for the organization and maintenance of Canadian naval forces. These the governor in council may place on active service at any time by reason of an "emergency" which is defined to mean "war, invasion, or insurrection, real or apprehended." The Naval Discipline Act of the Parliament of the United Kingdom and the King's Regulations and Admiralty Instructions are made applicable to the naval service of Canada.

By Chapter XVII provision is made for the construction of dry docks in three classes, those of the first class consisting of docks in which the largest ships of the British navy can be received and repaired with ease and safety. British naval vessels will have the right of priority in the use of these docks.

The Milk Test Act (Chapter LIX), provides for the testing and marking of glass ware used for milk tests. Chapter LXI, an act regulating the water carriage of goods, came into force on Sept. 1, 1910.

Seven acts (Chapters VI, XXIV, XXV, XXVI, L, LI and LVII), relate to Canadian railways. They deal *inter alia* with the granting of subsidies in aid of railway construction (Chapter LI), the incorporation of the Canadian Northern Alberta Railway Company and the construction of this line under government guarantee (Chapter VI), and the acquisition by lease of lines of railway connecting with the Intercolonial, government railways (Chapter XXV).

Other acts passed in amendment of previous legislation include those relating to annuities (Chapters IV and V), the civil service (Chapter VIII), the criminal code (Chapters X and XII), fisheries (Chapter XX), industrial disputes (Chapter XXIX), irrigation (Chapter XXXIV), bounties (Chapters XXXIII, XXXVII and XLVI), meat and canned foods (Chapter XXXVIII), conservation of natural resources (Chapter XLII), navigable waters (Chapter XLIV) and seed control (Chapter LIV).

SOUTH AFRICA

The colonies of the Cape of Good Hope, Natal, Orange River, and the

Transvaal, united in a Federal union in 1909 and the government of the new nation was organized during 1910. The federation grew out of the Fourth South African Customs and Railroad Conference, 1908, called to draw a new customs agreement and settle intercolonial disputes regarding railroad rates. Early in its session the conference passed a resolutin to draft a constitution as a basis for a federated union. A constitutional conference met at Durban, Oct. 12, 1908, and reconvened at Cape Town Nov. 23d, having agreed upon a constitution which was submitted in March, 1909, to the parliaments of the different colonies and by them approved. On July 1, 1909, the constitution was submitted to the Imperial Parliament in London; and on Nov. 20th received royal approval. It provides that royal proclamation might be made within a year uniting the four colonies in one government. the union of South Africa, and provision was made whereby other territories or colonies may hereafter join the union. The officers provided for are a governor general, appointed by the king, salary $50,000 a year; an executive council; a senate of 40—8 members from each colony and 8 appointed by the governor; and a house of assembly, with 51 members from Cape Colony, 36 from the Transvaal, 17 from Natal, and 17 from the Orange Free State. The membership of both houses is limited to persons of European descent. Cape Town was made the seat of the legislature, and Pretoria the seat of the executive government.

The royal proclamation was issued Sept. 20, 1909, and the constitution went into effect June 1, 1910, the eighth anniversary of the conclusion of peace. Viscount Gladstone was appointed the first Governor General of the Union of South Africa, and Gen. Louis Botha, Premier of the Transvaal, was invited to form the first Union Cabinet. His cabinet contains the names of four generals who rendered distinguished service in the Boer army. Eight members of the senate were appointed by the governor general in May, and thirty-two were elected at joint sittings of the upper and lower chambers of the parliaments of the four states. These parliaments thereafter passed out of existence. The ministry fixed Sept. 15th as the date for the election of the first Union Parliament, and Nov. 4th for the opening of the Parliament. His Royal Highness the Duke of Connaught was designated by King George to open the Parliament on his majesty's behalf. He arrived in Cape Town for that purpose the last week of Oct.

The entire summer was filled with activities in preparation for the elections. On June 14th, Gen. Botha announced the policy that would govern the ministry in the establishment of the new government. Foremost among its tasks was that of welding the different races into one great people; it would aim to encourage the white population and to restrict Asiatic immigration; it would establish a broad educational policy, respecting the principle recognized in the constitution, that the English and Dutch are the official languages. Its first duty would be to provide for the development of the industries of the country, the settlement of the mining lands, encouragement of capital, and the opening of foreign markets. He declared himself in favor of all steps which would strengthen the ties with Great Britain, and appealed to all to join in preventing South Africa from "falling back into narrowmindedness."

During the electoral campaign the educational question was the most prominent issue, and it early appeared that the old party divisions were still dominant. These parties are known as the Nationalists, represented by Gen. Botha, and as the name implies, standing for political coöperation between British and Boers, and including the majority of the latter; and the Unionists, led by Dr. Jameson, the leader of the famous Johannesburg raid of 1895, and representing the distinctively English party. The chief surprise of the election was the defeat of the premier, Gen. Botha, in the constituency of Pretoria east, by Sir Percy FitzPatrick. Mr. Huel, of the Transvaal, finance minister, and Mr. Moor, of Natal, commerce minister, were also defeated. The Nationalist Party secured sixty-five seats, or a majority of nine in an assembly of one hundred and twenty-one members.

The Labor Party elected four representatives. The elections were fought out along the old lines of cleavage in each of the colonies, except Natal; and the results indicate that the evolution of new policies in the development of the Union of South Africa, will be slow, and probably involve much bitterness.

The part to be performed by the South African Republic, with its enormous undeveloped resources of copper, coal, wool, wheat, cattle, and forests, not to speak of its gold and diamond deposits, must become increasingly important; and undoubtedly the work of the new Parliament will rapidly converge on the many industrial and commercial problems which confront it.

During the year much progress has been made in South Africa in the development of her agricultural resources and the unification and extension of the railroad facilities. The successful establishment of the Union of South Africa marks the end of a stage in the evolution of the British Empire. With the exception of Newfoundland and New Zealand, the self-governing white portions of the empire are now grouped in great nation states. There is no room for any new nation state of British blood, except possibly in East Africa.

THE AUSTRALIAN COMMONWEALTH

It has been an interesting and important year in the history of the young Commonwealth, the twelfth since the union of the Australian states. Some of its problems have closely resembled those that confronted the United States after the adoption of the Constitution, like the assumption of the state debts, and the equitable distribution of the surplus Federal revenues. One of the important developments in the past few years has been the adoption by the Australian High Court of the whole doctrine of judicial control over Federal legislation, a doctrine borrowed from the United States. The court early in its history had made statements which indicated that it would adopt this doctrine and later decisions have set at rest any doubt as to its attitude.

The so-called Braddon clause of the constitution provided that the Commonwealth should return to the states £3 out of every £4 of the customs and excise revenues, retaining £1 for Commonwealth expenditure; and during the year 1908–09 the sum thus returned was £7,927,158. The Braddon clause expired by limitation Dec. 31, 1909, and after many conferences between the state premiers, a new basis of distribution was submitted to a referendum in April, 1910, and met popular approval, thus becoming a part of the constitution. The new basis of distribution is calculated at the rate of one pound, five shillings, per annum per head of population of each state, with special allotment to Western Australia, in which the bulk of customs revenue is collected. The referendum also provided for a complete investigation of the subject of the consolidation and transfer of the state debts. The readjustment of revenue distribution was made imperative by the growing expenditures of the Commonwealth Government, the cost of the new old-age pension law for the year 1909–10 being £1,500,000. The total revenue collected by the Federal Government in the year 1908–09 was £14,350,792, of which £6,420,397 was distributed to the six states. The new ministry, representing the Labor Party, was sworn in April 29th, Mr. Fisher again acting as prime minister, with several members of his former cabinet.

The speech of the Gov. Gen., Earl Dudley, at the opening of Parliament on July 1, 1910, foreshadowed the policy of the new labor ministry, under Mr. Fisher's leadership. The speech favored the issue of Commonwealth notes as legal tender convertible at the treasury, a progressive land tax with a £5,000 exemption limit, and the repeal of the naval loan act. There is urgent necessity, it declared, for encouraging suitable immigrants and for the development of defense. It is intended to adopt a policy of making fertile land available speedily, to induce large numbers of settlers. Constitutional amendments enlarging the Federal powers in regard to corporations, trusts, combines, monopolies, navigation, and industrial matters are to be passed at this session and submitted to the referendum early in 1911. The defense act is to be amended, and there are to be uniform Federal postage rates—probably penny rates. It is also hoped within the year to improve the Canadian mail service, and the government is considering the acquirement of a complete state-owned telegraph service to Great Britain. Other bills will deal with quarantine, the Federal acquirement of lighthouses, the construction of the Western Australian Transcontinental Railway, the correction of tariff anomalies, amendment of the electoral laws, amendment of the restrictive features of the immigration laws, a subsidy for a press cable service via the Pacific, and the control of wireless telegraphy.

The progressive land tax is the most important feature of the Labor Party program. The tax is to be levied on "the reasonable market value of the land, assuming that the actual improvements thereon had not been made." The rates run from 1d. in the pound on estates between £5,000 and £10,000 in value, to 4d. on estates above £50,000. Absentee land owners (including corporations in which more than two fifths of the shares are held by absentees), pay taxes on the whole value of the property and 1d. extra on every pound of valuation; others pay taxes on market value less £5,000. The usual exemptions are made in favor of land held for charitable, religious, or public purposes. The taxpayer must make his own valuation, which may be amended by a commissioner, who has power also to make independent valuations or to use those made by any state authority. The taxpayer may appeal to the High Court against overvaluation; the commissioner may also appeal to the High Court for a declaration allowing the Commonwealth to resume at the owner's valuation land willfully undervalued. The tax is a first encumbrance and may not be evaded. Mortgagors pay it; the mortgagee is not liable unless he has entered into possession. Willful understatements involve a fine of £500, *plus* treble tax; and estimates more than twenty-five per cent below the finally ascertained value are deemed willful. The avowed purpose of the land tax, in addition to revenue raising, is to stimulate immigration, and enforce the subdivision of large estates which have never been placed under cultivation.

Legislation along similar lines is pending in the parliaments of most of the Australian states. Thus in New South Wales a comprehensive scheme is proposed for closer settlement, the construction of railways in an immense area of suitable crown lands in the west and northwest, and compulsory resumption of the ownership of land by the government. It is also proposed, by means of advances through the government savings bank, to enable intending settlers, who would not otherwise have the necessary cash, to secure holdings on privately subdivided estates, which would become the property of the state, the government guaranteeing the savings bank against loss.

Mr. Fisher, prime minister and treasurer, delivered his budget speech Sept. 7th. He stated that the Commonwealth revenue during the financial year 1909–10 was £15,538,000, including £11,593,000 from customs. In addition to this there was an advance from the trust fund for revenue purposes to comply with Section 87 of the constitution amounting to £451,000, the total revenue thus being brought up to £15,990,000. The expenditure for the financial year 1909–10 amounted to £7,497,000, this sum including £1,497,000 for old-age pensions. A system of invalid pensions is to be proclaimed in Dec.; women would also be admitted to pensions at the age of sixty. Mr. Fisher estimated the Commonwealth revenue for 1910–11 at £16,841,000.

Mr. Fisher further stated that the government intends taking over and developing the northern territory, and a large expenditure would be involved on this account. Penny postage, both throughout Australia and with countries over sea, would be established on May 1st next. Plans would be prepared for the Western Australian Transcontinental Railway and a bill for its construction would be introduced next session. The state debts would be taken over at an early date.

A referendum would be taken with a view to altering the constitution so as to give the Commonwealth legislative powers equal to those of the states for the settlement and prevention of trade disputes.

Later in the session the bill was enacted providing for a Federal note issue of £17,000,000, and credits were voted of £55,000 for the construction of Federal buildings at the new Federal capital, thus confirming the selection of the Yass-Canberra site. Provision for the projected military college was included. The government note law forbids the circulation of state notes six months after it becomes effective. The bills are to be issued in multiples of £10, and are payable on demand in gold coin at the government treasury, a reserve of twenty-five per cent in gold coin being held against the issue.

Three referendum bills have already been enacted by Parliament; one to authorize the nationalization of monopolies; one to enlarge the powers of the arbitration court in labor disputes; and a third to amend the constitution by giving the Commonwealth complete legislative control over trade, commerce, corporation, and industrial matters, including employment, wages, and the settlement of labor disputes, and by giving it power to deal with combinations and monopolies.

Commercially, the Commonwealth has continued to prosper. Statistics of its commerce in 1910 are not available. In 1909 the imports were valued at £50,054,905, an increase of £1,466,577 over the previous year, and exports, £65,338,613, an increase of £1,027,555. Wool was the export of chief value, £25,483,112, an increase of £2,570,900. The wool exports of 1909–10 aggregated 677,185,051 pounds in amount. The total gold output of 1909 was 3,430,463 ounces, valued at £70,907,670, a slight decline as compared with 1908. This decline has been continuous since 1903, when it was £91,755,000. On the other hand, a great increase is occurring in the exports of frozen meats, the statistics for the first seven months of 1910, compared with the same months of 1909 being:

	1900.	1910.
Mutton, carcasses.......	665,000	1,640,000
Lamb, carcasses.........	340,000	360,000
Beef, quarters...........	160,000	295,000

CHINA

James Brown Scott

In China the constitutional changes are of greater importance than the international happenings during the past year, because there are many evidences that the great empire is undergoing, although in a different way, the transformation which reorganized the internal government of Japan, and made full membership in the family of nations only a question of time.

The first of these occurrences is purely humanitarian. It will attract the attention of the world to the efforts which China is making to put its house in order. On Jan. 31, 1910, an imperial edict was issued abolishing slavery within the empire. A competent authority in matters Chinese says: "The far-reaching effects of this reform can hardly be estimated at present, but the proclamation of emancipation which is to be posted far and wide throughout the empire will be a charter of liberty to myriads of the down-trodden and oppressed, and will mark for them the upward turning of the way toward freedom and enlightenment." (*American Journal of International Law*, Vol. IV, page 794; for text of rescript see *Supplement*, page 359, to same volume.)

The second event of an internal nature is the introduction of a system of constitutional government throughout the vast empire.

"In Sept., 1905, an imperial commission was appointed to study political conditions and governmental policies in other countries. Aug. 27, 1906, an imperial committee was appointed to examine and report on the material presented by the commission. Sept. 1, 1906, an imperial decree proclaimed various reforms, and promised that in a few years' time constitutional government would be inaugurated. Another edict, Feb. 18, 1907, stated that a constitution and a parliament will be granted to the country. Sept. 20, 1907, the empress ordered the establishment of an assembly of ministers to prepare the foundations of constitutional government. Oct. 19, 1907, it was declared that, besides the Imperial Assembly of Ministers at Peking, provincial assemblies were to be formed in provincial capitals. Regulations therefor were published in the *Official Gazette*, July 22, 1908, as also for prefectural and district assemblies. Aug. 27th, the memorial and edict on constitutional government were issued, setting forth the general principles of the constitutional system and the steps to be taken leading up to the summoning of a parliament in 1917." (*American Journal of International Law*, Vol. IV, page 199.)

Further progress in constitutional organization was marked by an edict setting Oct. 3, 1910, as the date for the opening of the Imperial Senate (upper House of Parliament). "The ninety-one members represent six classes: (1) Princes and nobles of the imperial clans, fourteen; (2) Manchu and Chinese nobility, twelve; (3) princes and nobles of the dependencies outside of eighteen provinces, seventeen; (4) the imperial clansmen, six; (5) officials of ministries and offices, thirty-two; (6) eminent scholars, ten. This gives a Manchu preponderance in numbers and influence." (*American Journal of International Law*, Vol. IV, page 934.)

The senate met on the date prescribed (Oct. 3, 1910), and memorialized the throne to put into effect immediately the constitutional provisions. The imperial authorities consented, on Nov. 4, 1910, to reduce to 1913 the period at which they should go into effect, and advise conservative action. The senate, however, has insisted that the proposed constitution be put into effect at once. On Dec. 8, 1910, the press stated that a constitutional Cabinet will be installed Feb., 1911. Thus the matter rests at present with an assurance of constitutional government within a very short time.

An important international event is a placing of the loan for building the Hankau-Szechuan Railway, which was to be constructed by capital supplied by the French, German, and English syndicates. The United States was unwilling, however, to be excluded from this arrangement, and after negotiations extending through the past twelve months and more, an agreement has been reached that the original amount of the loan ($27,000,000) should be increased to $30,000,000, and that the United States should participate in its benefits. By virtue of this agreement with the Chinese Government and the various participants in the loan, the American bankers are to contribute one fourth of the total sum. America and American materials are to have the same rights, privileges, preferences, and discretions for all present and prospective lines originally reserved to the British, German, and French nations, and materials, except the engineers for the two sections about to be placed under contract. An assurance was given by China that American engineers would be included in the engineering corps of both roads, and that the present waiving of America's right to chief engineers would in no way prejudice its rights in that regard when future extension should be undertaken. (*American Journal of International* Law, Vol. IV.) In connection with this loan assurances are given that the Chinese Empire will at once begin a financial reform, including the revision of the customs tariff and the currency, long under contemplation.

It is not the paltry sum of money involved which led the American Government to insist upon equal participation. The desire of the United States is to preserve the open-door policy with equal opportunity for all; and as loans in China are political and not merely financial questions, and as the loans are secured by mortgages or pledges of various interests, it seems indispensable that the United States shall take part in them unless it is willing to be excluded from future arrangements, and from exercising its beneficial influence in preserving the policy of equality in commercial opportunity initiated by the late Sec. Hay and accepted by the nations generally.

RUSSIA

The Russo-Japanese agreement was signed in St. Petersburg July 4th, and has for its object the consolidation of peace in the Far East. Its stipulations are as follows: (1) With the object of facilitating communications and developing the commerce of the nations, the two high contracting parties agree to extend to one another their friendly cooperation with a view to the improvement of their respective railway lines in Manchuria and the perfecting of the connecting services of the said lines, and to abstain from all competition prejudicial to the realization of this object. (2) Each of the high contracting parties undertakes to maintain and respect the *status quo* in Manchuria resulting from all the treaties, conventions, and other arrangements concluded up to this date, either between Russia and Japan or between those two powers and China.

The expulsion of the Jews from Russia continues, and from Kiev accounts of the increasing numbers of expulsions, and the harsh methods adopted, have been revived. During July expulsions were made at the rate of forty-five a day. From July 4th until July 15, 497 were expelled by what is known as the second method; that is, they were forced actually to leave town. During the same period 1,121 persons were expelled by the first method, which, in effect, is a warning for their departure, but permits them time for a settlement of private affairs.

Finland.—The extension of the authority of the Duma over Finland by order of the czar, early in the year, called public attention to the brave struggle that is being made by the people of Finland to maintain their rights against the arbitrary attempts of Russia to interfere with them. In 1809 Finland accepted the Russian protectorate after a solemn promise by Alexander I that its constitution, its religion, and its laws should be preserved, a pledge that has been since renewed by every succeeding czar. Under the protection of Russia from outside aggression, Finland was, on the other hand, Russia's loyal confederate, ever ready to come to her rescue. This condition of affairs continued until the close of the last century, when, as the power of the Russian Nationalists increased, the greater became the encroachments upon the rights of Finland. In 1903 the Finnish Constitution was revoked, and a dictatorship introduced, but the internal changes in Russia in 1905, due to the war with Japan, had a decidedly favorable effect upon the affairs of Finland. The anticonstitutional laws were abrogated and a Diet convoked, reorganized on the basis of universal suffrage. But this condition was not allowed to continue, and the autonomy of Finland was removed by order of the czar, who referred the matter to the Duma, which enacted the Imperial Legislation law on June 30, 1910. Under this law the Finnish Diet remains, with legislative power over matters which concern Finland exclusively; all other laws are to be enacted by the Duma and the Imperial Council, which may also amend and change the fundamental principles governing the internal administration of Finland. The military and financial administration, the right of assembly, the control of the press, etc., are to be made uniform throughout the Russian Empire. The czar called the Finnish Diet in extraordinary session on Sept. 14th to elect representatives in the Imperial Parliament, and to act upon two bills drafted by the Imperial Council of Ministers, upon which the Duma is to pass at the session which began in Nov. At the opening session of the Diet, Mr. Svinhuvud, the presiding officer, stated the purpose of the session, and said: "Inasmuch as the Imperial Legislation Law of June 30th is inconsistent with the Constitution of Finland, it is not binding upon the citizens, the officials, or the Diet of Finland, and has no legal force. The Council of Ministers, moreover, has no constitutional authority to send bills to the Finnish Diet, and I do not regard it as my duty to submit for consideration bills that have been so transmitted." After a brief debate, the decision of the presiding officer was approved by the whole Diet without a dissenting voice. Subsequently the czar dissolved the Diet, and ordered that new elections be held in Jan., 1911. (See IV, *International Relations—Japan, Manchuria.*)

LATIN AMERICA

ALBERT HALE

Centennial Celebrations.—The most notable events of the year 1910 were the celebrations, over a great part of Latin America, of the centenary of the declarations of independence, which were made by remarkable psychological concurrence in 1810. The wave of (American) republicanism made the year 1809 pregnant with unrest, but this did not declare itself effectively until just one hundred years ago, in 1810.

The Argentine Republic celebrated its national holiday, May 25th, 1910, independence day, with great magnificence. In addition, the entire month of May was devoted to the ceremonies. The affair was international in more senses than one; special delegations, ambassadors, ministers, and associations from many foreign governments attended; the President of Chile was a noted guest, and the Infanta Isabel from Spain represented that kingdom. Both were received with spontaneous enthusiasm by the people of Argentina—a proof of their friendliness to those former enemies. In addition to the celebrations there were opened in Buenos Aires five expositions, all international in scope, and two of them expressly so. The Agricultural Exhibition and the Exposition of Hygiene attracted exhibitors from all parts of the world; the Railway and Land Transport Exhibition displayed the methods of transportation employed in modern commerce. All of these illustrated the steady advances, the social, sanitary, educational, industrial, and commercial progress of the country; they attracted minute attention to that portion of South America, and the centennial, with its object lessons, has aroused more discussion of the future possibilities of Latin America than was ever given to the matter before.

Chile devoted the month of Sept. to a centennial celebration of similar character. The independence day of that republic is Sept. 18th, when, in 1810, the first declaration of insubordination from the Spanish crown was made. The result was here equally effective. Many foreign governments sent special delegations, Spain being represented, and the President of Argentina being the guest of the nation with the same cordiality accorded the President of Chile at the Buenos Aires celebration. An industrial exhibition was held, with foreign exhibits. Great interest has thereby been aroused in Europe concerning Chile's progress and future.

Colombia celebrated her centennial on July 20, 1910, but the awkward distance of Bogota from foreign centers made this of less moment than should have been the case.

Ecuador had celebrated her independence Aug. 10, 1909.

Venezuela's new constitution prescribed April 19th as independence day, and it was so celebrated in 1910.

Mexico has her national independence days on Sept. 15th and 16th. This year was the centenary of the event, and in addition to these particular days, the entire month was set apart for national rejoicing. In the case of this republic, too, foreign governments made extra efforts to recognize the importance of the occasion. Spain showed her determination to obliterate the past. The United States extended a most particular act of courtesy, a new step in foreign relations, by sending not only a special ambassador from the government, but also special representatives from the two branches of Congress. Mexico, in the celebrations and public functions, laid stress on the material and educational progress of the Republic, but in addition this event was seized as the fitting opportunity to inaugurate a series of public improvements which, for future generations, will be impressive of the accomplishments of the century, and of the well-deliberated promises of future advances in similar directions. In Nov. there occurred an insurrection in Mexico, led by Francisco I. Madero, which extended to many provinces, and for a time threatened to become serious. It was suppressed by the prompt and effective use of the national troops.

It had been practically suppressed on Dec. 1st, when Porfirio Diaz took the oath of office as President of the Republic of Mexico for the eighth time. Ramon Corral was inaugurated as Vice President at the same time. In view of the disturbances through which the country had recently passed, the inauguration was not marked by the season of fiestas which has accompanied it in former years. On the day of his inauguration, Pres. Diaz sent the following public message to all nations:

> It is very gratifying to me to say that my heart is full of faith in the progress of a people who, like the Mexican, have known how to conquer by their own efforts a place among the lovers of toil after having proved their valor in patriotic defense of country. To-day Mexico belongs definitely to the group of new nations of assured stability, because against the firm guarantee of peace which we possess no influence tending toward its dissolution can now or ever shall prevail. As to the relations between Mexico and the United States and other friendly nations, never have they been more cordial.

Political Changes.—During the year 1910 political changes took place in several of the republics of Latin America. In Argentina, Dr. Roque Saenz Peña was inaugurated President, Oct. 12th. In Brazil, Marshal Hermes da Fonseca, on Nov. 15th. In Chile Pres. Montt died (Aug. 16th) in Bremen, Ger., on his way to take a needed rest abroad; he was succeeded, constitutionally, by Vice Pres. Albano, who died Sept. 6th, in office; the Minister of Justice then acted as chief executive, and Ramon Barros Luco was by special election chosen for the Presidency Oct. 15th, the real term of office beginning on the national holiday, Sept. 18th. In Colombia Carlos Restrepo began his term July 13, 1910. In Costa Rica Pres. Jimenez, May 10, 1910. In Guatemala Estrada Cabrera was reelected for a second term to begin March 15, 1911. In Paraguay Juan Gaona was elected to the Presidency, to qualify in Dec. In Mexico Porfirio Diaz was elected President for the eighth term, to begin Dec. 1, 1910. In Panama Pablo Arosemena was elected President in place of the deceased Obaldía, and inaugurated Oct. 5th. In Uruguay Jose Battle y Ordoñez was elected to the Presidency, his term of office to begin March 1, 1911.

Boundaries.—In the matter of boundary relations, Latin America has shown her practical acceptance of the principles of arbitration in a highly commendable manner. Argentina and Chile have made agreeable progress in the demarkation of their international line, and the hope was expressed that the entire boundary would be settled during the year. The dispute between Ecuador and Peru, which once threatened to produce a rupture of international relations, has been submitted to the friendly offices of Argentina, Brazil, and the United States, so that these three republics will be of great practical service in upholding the peace of the western hemisphere; this is almost the first instance in which a great question of this nature has been submitted to the arbitration of western Powers exclusively; Brazil and Uruguay have concluded a treaty concerning the frontier on Lake Merim and the Jaguarao River; Uruguay and Argentina have agreed upon the unrestricted navigation of the River Plate; Brazil and Peru promulgated a treaty completing the demarkation of the limits between the two republics, and establishing general principles of navigation and trade on the Amazon. Costa Rica and Panama signed in Washington a convention submitting their boundary controversy to the decision of the United States Chief Justice.

The Hague tribunal decided an arbitration case between United States and Venezuela, the Orinoco Steamship Company receiving $46,867; it is noteworthy as the first instance where a previous arbitral reward was annulled.

Postal Convention.—One very indicative action illustrating the closer relations extending throughout Latin America was taken during the past year by Uruguay, when that republic invited all the republics of South America to join in an international postal convention to meet in Montevideo in Jan., 1911. All have accepted and the result promises to be of substantial value to the southern continent.

Conferences.—In July was held in Buenos Aires the Fourth Pan American Congress to discuss matters relative to the Pan American Union, and to propose methods to be finally adopted by all the members of that Union (the twenty-one republics of America). Its most important action perhaps was a resolution recommending that all the American states bind themselves to submit to arbitration all claims for pecuniary damages that may be presented by their respective citizens and which cannot be settled through ordinary diplomatic channels. It also recommended uniform copyright laws, uniform trade-mark laws, uniform commercial statistics, and a uniform census every ten years.

In Salvador was held (Feb.) a Central American Conference, its chief topic being the discussion about establishing an international agricultural school. The International Bureau for Central America is located in Guatemala City.

Nicaragua.—As far as concerns the diplomatic conduct in Latin America in general, the year was uneventful, except that in the Republic of Nicaragua a civil war exhausted the spirit of the people and prostrated the industrial activities. The forces of the revolutions on the east coast finally dispossessed those on the west, in the capital, Managua, and at the end of Aug. Gen. Juan D. Estrada took charge of the government as Provisional President, issuing (Sept. 15th) the law of guaranties and a call for a presidential election to be held within six months.

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OTHER COUNTRIES

MARCUS BENJAMIN

Germany.—At Königsberg, Aug. 25, Emperor Wilhelm created a political sensation by again asserting his belief in the divine right of kings. He said: "Looking upon myself as the instrument of the Lord and regardless of the views and opinions of the hour, I shall go my way, which will be devoted solely to the well-being and peaceful development of the Fatherland." The entire speech, which included a severe comment on the present movement for woman's suffrage, but especially the foregoing extract, aroused in the press of Germany much criticism and rebuke; and has since been violently attacked by the Socialists in the Reichstag. Many of the conservative journals pointed out the constitutional character of the Kingdom of Prussia in the empire, and deplored the uncontrolled public speaking of the emperor. Never before has Emperor Wilhelm set into such clear relief his mediæval idea of his nonresponsibility to man's judgment, of his not being bound by the constitutional coöperation of the people, and of ruling by God's free grace against all those convictions and feelings which to-day determine Germany's existence as a state. Although after the publication of an interview with the emperor in a London newspaper in Nov., 1908, he promised that thereafter his public addresses should first receive the approval of his ministers, in this case it is believed that this course was not pursued.

France.—The persistent struggle between labor and capital that manifests itself by strikes has been the thorn in the side of France during the year, and the many acts of cruelty and violence that have accompanied these disturbances have led to much discussion, in which the question of the "obligatory strike" has been considered. In other words, before a strike is declared a vote is obtained from all concerned, whether employees of private firms or of the government, and the decision to strike or not to strike is made obligatory on all participants. On the other hand, there are those who contend that the obligatory strike will compel a man who is out of work to refuse employment against his will, hence, essentially, depriving him of his individual liberty. Beginning on Oct. 11th there occurred a strike among the railway employees which not only tied up all the transportation facilities of France, but further provoked many sympathetic strikes, and even at one time threatened a universal strike. This very grave danger to the community was prevented by the sagacity of Aristide Briand, the Prime Minister. His action was masterly. He asked the strikers to confide their case to him, and encouraged them with the hope that he would aid them to win. Then summoning the strikers to military duty, he informed them that their duty to the state required them to return to work. "This is not a strike—it is an insurrection," he is reported to have declared. At first they hesitated, but soon recognized that obedience to the law would ultimately be their best course, and on Oct. 17th the strike was called off. Their leaders had been arrested and sent to prison, for the Minister properly discriminated between those who provoked the strike and those who acquiesced in it. Thus a national calamity was averted, and it is asserted that the government has assured the strikers of its aid and efforts to secure higher wages, as well as a promise that a bill redefining the relations of railway employees to the state should be brought to the consideration of the House of Deputies. Later, when the matter came up before the Chamber, a vote of censure was proposed by his own party, but Briand in a speech of incisive phrase and accomplished oratory flayed the Socialists for their violence in trying to prevent him from speaking. In addition, he defended the attitude of the government in suppressing the railroad strike, calling attention to the fact that the desired end had been accomplished without the shedding of a drop of blood. A resolution, introduced by the Socialists, to impeach M. Briand for his "dictatorial crushing down of wage-earners," was rejected by a vote of 503 to 75, after which the Chamber voted confidence in the government to safeguard the interests of the working classes and preserve the vital interests of the nation. On the day following, Nov. 2d, Briand tendered the resignation of his Cabinet to Pres. Fallieres, in consequence of a lack of support of certain of his associates, and as a result of the attack of the Socialists on his policy in suppressing the strike. He was immediately designated to reorganize the ministry, and his new Cabinet, from which were omitted the names of those members who had been opposed to his policy in the railway strike, commands a substantial majority in the Deputies. The new Cabinet is as follows:

M. Briand, Premier, Minister of the Interior, and Minister of Public Worship; M. Théodore Girard, Minister of Justice; M. Pichon, Minister for Foreign Affairs; General Brun, Minister of War; Vice-Admiral Boué de Lapeyrère, Minister of Marine; M. Maurice Faure, Minister of Public Instruction; M. Klotz, Minister of Finance; M. Jean Dupuy, Minister of Commerce; M. Reynaud, Minister of Agriculture; M. Morel, Minister for the Colonies; M. Lafferre, Minister of Labor; M. Puech, Minister of Public Works.

It is admitted that Premier Briand's handling of a difficult and dangerous situation was most masterful, and saved the Republic of France from the greatest peril it has encountered since its establishment.

The year in France has been notable for the almost complete failure of the wine crop. Not since 1810 has the disaster been so great. The Rhine and Moselle districts of Germany were equally affected, and the Austrian and Italian crops are estimated at about one third of normal. The normal annual yield of the European vineyards is computed at 3,000,000,000 gallons. Of this, France usually produces about 1,000,000,000 gallons. In 1910 France's production will only be 400,000,000 gallons. As France is both the largest producer and consumer of wine, the failure of this year's harvest is nothing less than a national disaster. Assessing the wine at a price of only sixteen cents a gallon, the loss to France is some $100,000,000.

Italy.—Italy has continued to be a sufferer from causes beyond her control. The dread earthquake still afflicts the unfortunate peninsula, and the vicinity of Naples has again been the scene of disaster, leaving in its wake ruin and suffering. The fatal pellegra fails to yield to treatment, and its cause has not yet been definitely agreed upon, although it is generally attributed to a fungus formed on moldy corn, and the suggestion has been made that it is diffused among the people through beer brewed from corn malt. During the late autumn the existence of cholera in Naples was reported, and though deaths were described as due to gastroenteritis, a verbal evasion, tourists were unwilling to travel there, and canceled orders for rooms in pensions and hotels, causing a serious financial loss to the country. Strict sanitary measures to prevent the spread of the disease were enforced in Florence, Rome, and Naples; and the Italian Parliament will be asked for an extraordinary credit of $60,000,000 for the immediate construction of dams, aqueducts, and artesian wells, to provide the cities and villages of Apulia with a good water supply. The prevalent form of cholera this year was of a particularly malignant variety, the fatalities varying from sixty to eighty per cent from day to day, assuming that all cases of seizure were reported. The epidemic was considered to be about at an end on Nov. 1st, at which time the department of health reported only three new cases.

Spain.—The Ferrer incident of a year ago has not been without its aftermath, for it resulted in the fall of a cabinet. This year the relations of Spain with the Vatican have been critical, culminating in the withdrawal of the Spanish Ambassador to the Vatican, and a statement to the effect that the Spanish Government had exhausted its efforts to bring about an agreement for the reduction of religious orders and establishments. On the other hand, Rome claims that at the bottom of the anticlerical movement in Spain are antimonarchical forces aiming to unite the two nations of the Iberian peninsula under a republic. Anarchy has been rife, strikes frequent, and, owing to the unpopularity of the struggle with the Moors in Africa, agitation against military service a common occurrence. Conspiracies against the government, and for the formation of a republic, are reported at frequent intervals. The Spanish Premier, Señor Canalejas, has shown himself a man of courage, tact, and resource, in the face of very trying circumstances, and has been steadfastly supported by King Alphonso.

Portugal. — Lisbon was jubilant with its entertainment of the President-elect of Brazil—long a colony of Portugal—on the evening of Oct. 4, but when the sun rose on the following morning, while Pres. Fonseca was safe on a Brazilian war vessel, the government had become a Republic and King Manuel a fugitive.

The reasons for this sudden change are easily explained. For years the decadence of Portugal has been evident. Once a great power, with great colonial possessions and great wealth, it has steadily and persistently dwindled to an insignificant state. About the size of New York, with a population of less than six millions, it has a national debt of $800,000,000, while the revenue for the last fiscal year showed a deficit of $27,000,000. Extravagance or worse prevailed in official life, for the government has been described as consisting of political rings which succeeded one another in office and pursued a consistent policy of doing as little for the good of the country, and of stealing as much public money and running the nation as deeply into debt as it was possible for ingenious and pertinacious human rascality to do. The masses, on the other hand, are intensely poor, and by the circulation of inflammatory appeals by way of tracts and newspapers, were led to believe that their condition could be improved only by a change of government. A strong spirit of anti-clericalism prevailed in Portugal as well as in Spain. It was these conditions that led the former king, Carlos, to appoint as his premier Joao Franco, who, in his endeavors to reform the finances of the country, ruled for a time without a Parliament. This unfortunately culminated in the assassination, two years ago (Feb. 1, 1908), of Carlos and of his oldest son. Under these conditions Manuel, the second son, saved from death by his mother, succeeded to the throne. He inherited a condition which even the strongest ruler might have found hopeless. Of the two principal parties in Portugal each was more corrupt than the other, according as to whether it happened to be in office or not. There was, in fact, an understanding of rotation which defeated any attempt at reform. One set of corruptionists succeeded another with a combination so powerful that good judges of the European situation have wondered whether it was not the attempt of King Carlos and his disinterested ministry to upset this machine which brought about the murder of that king and his eldest son. It is sometimes highly convenient to have anarchists to blame. The youthful king, for he lacked two years of his majority, yielded to the conditions of the time and removed many of the restrictive measures which had given offense to his people, perhaps showing his weakness most when he took the ban off the suppressed newspapers that had been preaching veiled treason. It should be added that the failure of Manuel to contract a desirable matrimonial alliance, and his somewhat sensational attachment to a Parisian danseuse, still further weakened his hold on the throne.

Revolution was in the air, and an outbreak was expected sooner or later. But when the time came, the government was taken completely by surprise. The immediate cause of the outbreak is said to have been the killing of Dr. Miguel Bombarda by a lieutenant of the general staff named Santos, who was an ardent Royalist. He had been an inmate of an asylum, from which he was discharged recently, contrary to the advice of Bombarda. Santos left Lisbon when released and went to Paris, but he returned to Lisbon and immediately sought Bombarda at the asylum. A heated altercation culminated in Santos drawing a revolver and fatally wounding Bombarda. By people of cool intellect and calm judgment the murder was regarded as the act of a demented man, but to the extreme revolutionists it seemed a political crime. They used it to incite the people of Lisbon against the monarch. The Republican newspaper *Seculo* issued an inflammatory placard, widely circulated, stigmatizing the murder as a political assassination, and calling on the people to rise and put an end to the monarchical régime which permitted such foul deeds. Groups of excited workmen gathered around the placards and began to shout, "Down with the monarchy!" This was the beginning of riot. When the police tried to restore order they were attacked by the Republicans armed with revolvers. Many shots were fired and several of the police were wounded. The rioters were dispersed in that part of the city, but afterwards went in a body to the barracks in the Rua Castelho, where was quartered the first battery of artillery, known to be ardent partisans of the Republican party. In response to the demands of the populace the disaffected artillerymen mutinied. They made prisoners of the only two officers in the barracks, and trampled on the Royalist flag.

Word of the rising was at once communicated by telegraph and telephone to other disaffected centers in Lisbon; and in accordance with a prearranged plan telegraphic and railway communication between the capital and the outer world was cut off. This prevented many of the higher officers from reaching their troops, and it was not until the morning following (Oct. 5) that the colonel of the general staff arrived in Lisbon to take charge of the operations against the insurgents. Meanwhile, fighting continued in the streets. The troops that remained faithful to the government had position in the Dom Pedro Square, but they soon made common cause with the insurgents and returned to their barracks. The populace applauded this action with cries of "Long live the Republic!" All through the thirty hours of fighting the troops, especially the municipal guards, fought with remarkable bravery and determination, and were superior in numbers to the Republicans until weakened by desertions. They finally yielded, however, being disheartened by a want of enthusiasm or even support on the part of their officers, many of whom secretly sympathized with the revolutionary movement, though they preferred to wait upon events before they did so openly.

Meanwhile, the navy began to show sympathy with the Republicans, and at sunrise (Oct. 5) the sailors in the marine barracks at Alcantara hoisted the red-and-green flag of the insurgents, while simultaneously three warships lying in the harbor did the same. The flagship and a single gunboat continued to fly the royal standard, but remained silent while the insurgent cruisers crossed the bay and opened fire on the royal palace at a range of about 1,000 yards. The military, surrounding the palace, failed to bring their guns to bear upon the bombarding warships. Later in the day the Republican portion of the crew on the flagship mutinied, and as night came on attacked and killed the few Royalists who rallied around a machine gun.

According to all accounts the king remained at the palace, comporting himself with bravery. He showed himself absolutely fearless, and strongly objected to leave even when shells began to penetrate the building, claiming that flight would receive the worst possible interpretation. Finally, however, yielding to the importunities of his advisors, he left the palace, reached the royal yacht *Amelia,* and found an asylum in Gibraltar, whence later he went to England.

On the morning of Oct. 5, success having apparently crowned the efforts of the Republicans, their flag was raised on the military arsenal and the city hall. The warships greeted the hoisting of the flags with salvos of artillery, and then buildings flying the old flag of Portugal were raided, and the emblems of monarchy removed. A provisional government was constituted as follows: Theophile Braga, president; Alphonse Costa, minister of justice; Bernardino Machado, foreign affairs; Bazilio Telles, finance; Antonio Luiz Gomes, public works; Col. Barreto, war; Antonio José Almeida, interior; Amaro Azevedo Gomes, marine, and Euzebio Leao, civil governor of Lisbon. At once the following proclamation was issued:

> People of Portugal.—The people, the army, and the navy have proclaimed the Republic. The dynasty of the Braganzas, maleficent and willful disturbers of the social peace, has been forever proscribed from Portugal. This rare and notable event, the expression of the pride of an indomitable race and the redemption of a country the bravery of which has rendered it legendary, fills with joy and enthusiasm the hearts of patriots. This day puts an end finally to the slavery of this country, and the beneficent aspiration of a régime of liberty rises luminous in its virgin essence. Citizens, the passing moment repays and recompenses us for all the struggles, all the pitiful conditions from which we have suffered. Let this moment be the beginning of an epoch of austere morality and of immaculate justice. Let us in glorious communion of principles make our sacrifice for our country the basis of our political program, and let generosity toward the conquered be the basis of our moral program. Citizens, let one interest alone—the interest of the Fatherland—animate us, and let one desire—the desire to be great—unite us. The Republic trusts the people to maintain social order, to respect justice, and to devote themselves to the common cause of liberty. Consolidate with love and sacrifice the work which arises from the Portuguese Republic.

The subsequent events included the proscription of the religious orders, and Oct. 18 a decree was issued banishing the Braganza dynasty, all members of which were forbidden to enter Portuguese territory.

Sober judgment recognizes that the monarchy has been overthrown, but the economic conditions and problems that have been the cause of Portugal's political disturbances remain to confront the new leadership. The mass of the people is indifferent and stupid, they vote as they are directed, the number of illiterates is greater than in Turkey; on the other side, stands a group of intellectual theorists actuated by the loftiest aims and ideas of the occident, who dream of things impossible in Portugal.

Greece.—The Kingdom of Greece has been in a state of constant internal turmoil during the year, in addition to the increasing friction with Turkey. On Sept. 14th last, King George opened a new national Assembly, called for the purpose of revising the nonfundamental provisions of the Constitution, and introducing reforms long demanded by the people. The Assembly had been in session but six weeks when it was dissolved by the king, after fruitless efforts to accomplish the purpose for which it was called. Prior to its dissolution, the Assembly refused a vote of confidence to M. Dragoumas, the Prime Minister, who thereupon resigned. The king requested M. Venezelos, the Cretan leader, to undertake the formation of a new Cabinet, which he finally consented to do. Elections for a new Assembly were held in Dec., which resulted in a victory for the ministry. The new Assembly meets in Jan. The chief difficulty in the Grecian situation is the lack of a practical plan for the improvement of the finances of the country; the absence of any coöperative action among the many small groups which make up the political parties in the kingdom; and the failure of the government to establish working relations with the young Turk party now in control in Constantinople.

Turkey.—The development of Turkey under the influence of the Young Turks proceeds slowly. Of paramount interest has been the attempt to place a foreign loan. The fall of Abdul Hamid and the revival of the Constitution, together with the seizure of large sums of money belonging to the late sultan, have had the effect of leading the people to believe that taxation was unnecessary. Formerly they were often called upon to pay taxes twice. Now they refuse to pay at all, and regard the demands made upon them by the authorities as unreasonable. It is understood that a large amount of ready money is desired to allow Turkey to take advantage of the warlike conditions that prevail in adjacent countries, and especially Greece. Indeed, it is claimed that the Young Turk party can prevent its overthrow by revolution only by uniting the discordant elements in a war against a foreign foe. Attempts were made to induce Turkey to form an alliance with Germany and Austria-Hungary on the ground that, with such an alliance, Turkey would be insured against any Balkan coalition, and need fear opposition from neither Russia on the one hand nor Great Britain on the other. Germany, at the time of this proposition, succeeded in selling to Turkey two armed cruisers for the Ottoman navy. The placing of the loan failed in Paris, Berlin, and in London; but on Nov. 3d three contracts were signed by the Turkish minister of finance and representatives of an Austro-German syndicate. The first related to an advance of £T5,500,000, as required by the Turkish Government, against treasury bonds, which it will issue to the syndicate. The bonds will bear interest at the rate of five and a half per cent. The second contract provides for the issue of a loan of £T7,040,000, at four per cent. The rate of emission is to be eighty-four, plus the expenses of the issue, which will be paid by the Ottoman Government. The third contract related to a small temporary loan.

Egypt.—The unrest or opposition to a foreign governing power, especially when that power is using its best efforts to improve the condition of the lower classes, has attracted wide attention to prevailing conditions in Egypt. This has manifested itself more conspicuously in consequence of the brutal assassination of Boutros Pasha, while prime minister. He was a native Egyptian Christian, and an able and efficient supporter of the government which the nationalists are seeking to overthrow. It was for this reason that the address before the National University in Cairo by Theodore Roosevelt attracted more than usual attention. Referring to the murder of Boutros, he said it was "an even greater calamity for Egypt than it was a wrong to the individual himself." Also, "it is of no consequence whether the assassin be a Moslem or a Christian, or a man of no creed; whether the crime be committed in political strife or industrial warfare; whether it be an act hired by a rich man or performed by a poor man; whether it be committed under the pretense of preserving order, or the pretense of obtaining liberty, it is equally abhorrent in the eyes of all decent men, and, in the long run, equally damaging to the very cause to which the assassin professes to be devoted." It was generally recognized that the address of Mr. Roosevelt would aid in promoting a stable, just, and enlightened form of government in Egypt, especially as at the time the authorities had shown a disposition to be too lenient with the assassin. A few weeks later, May 31, on the occasion of his receipt of the freedom of the city of London, in an address at Guildhall, Mr. Roosevelt distinctly warned the British people against oversentimentality in Egypt. He said, "if the present forms of government in Egypt, established by you in the hope that they would help the Egyptians upward, merely serve to provoke and permit disorder, then it is for you to alter the forms; for if you stay in Egypt it is your first duty to keep order above all, to punish murder and bring to justice all who incite others to commit murder, or condone crime when it is committed." This address, which was characterized as "unique," and as one hardly to "be recommended for general imitation," was not without its influence, for the condition of Egypt was made the subject of debate in both Houses of Parliament, during which the following declaration of the British policy was made by the foreign secretary, Sir Edward Grey:

> We are responsible for the government of Egypt. We carry it on through Egyptian Ministers and through British advisers, and in the long run and in important matters we must be held responsible for the general policy, and the Ministers are therefore bound to take our advice, though there may be varying degrees of responsibility from time to time and on particular questions. The British occupation must continue in Egypt more so now than ever. It is not a question of British interests in Egypt. It is simply this. We have gone on doing better and more and more good work year after year; that good work depends upon our stay there, and we cannot abandon Egypt without disgrace. We cannot see that work undone, and the agitation against the British occupation in Egypt can have but one result, whichever party is in power, and that is to lead to more assertion of our authority and our intention to see our work maintained.

Japan.—The more important events in the year's history of Japan are set forth in the Department of International Relations. The budget of 1911-12 was presented to Parliament on Dec. 16th. as follows: Receipts, ordinary, 492,138,000 yen; extraordinary, 48,796,973 yen; expenditures, ordinary, 407,113,274 yen; extraordinary, 133,821,699 yen. A yen is equivalent to about fifty cents in American money.

Marquis Katsura, Premier and Minister of Finance, in presenting the budget, stated that in the affairs of the current year the financial program has worked well. This program will be continued. During the year past the government has had a particularly heavy burden to carry. The navy has called for an increased expenditure to avoid the criticism of neglect in the face of the advances made by other powers. The annexation of Korea and disastrous floods have added materially to the extraordinary expenses.

Marquis Katsura declared two rules as effective in directing the financial policy of the government:

First, to maintain the balance of revenue and expenditure in the general estimates, and not to look to loans as financial resources.

Second, to maintain the program of annual redemption of the public debt by an amount of 50,000,000 yen or more.

Next year's estimate of appropriations for railways is nearly 52,000,000 yen. This amount is required because of the determination of the government to improve the railroad system. Commencing next year the reconstruction of the main line into a broad-gauge road will be undertaken. A loan for this purpose will probably be raised.

The Passion Play. — One of the events of the year was the performance of the *Passion Play* at Oberammergau by Bavarian peasants. This year's presentation was fully equal to those of recent decades—it is performed every ten years—and received favorable criticism from all who saw it. The play is presented under the direction of a Passion Play committee which regulates everything and which chooses all the players. There were 122 persons selected for speaking parts, and 260 others who acted but had no lines in the drama. The first public performance was given on May 16, Anton Lang playing the part of the Christus. The official reports show that 225,000 persons attended the fifty-nine performances. The gross receipts were $476,150, from which, after deducting the cost of production and other expenses, there remained $324,100 to be distributed. The managers and chief performers received $625 each, while those who played as members of the crowd received $30 each, and the school children $7.50; $2,625 was given to the poor and $108,750 deposited in the village treasury for communal purposes. (See *Pilgrimage to a Modern Jerusalem and a New Gethsemane,* by Mrs. Louise Parkes-Richards.)

See also XXXIV, *Chronology and Necrology.*

IV. INTERNATIONAL RELATIONS

THE GROWTH OF INTERNATIONALISM

James Brown Scott

The distinguished historian, Mr. Lecky, stated that nationalism was the miracle of the nineteenth century, and, without stopping to inquire whether this generalization is wholly correct, it is a fact that the unification of peoples along race lines into recognized nations has indeed been a marked characteristic of the last century. The twentieth century seems likely to be as distinguished for internationalism as the last century for nationalism; for the evident tendency is toward international organization in some form in order to centralize under a common control, and to administer for an international purpose the various unions and instrumentalities which have sprung into existence within the last generation or two. The movement drawing the nations into close relation is twofold: official—that is, upon the initiative of one or more nations peculiarly interested in a phase of the international problem; and unofficial—that is, due to the initiative of leaders of associations or societies, with the encouragement, although not under the control or initiative, of any government. The movement is interesting in itself, and its consequences are of the greatest value not merely to publicists, but to the nations themselves, which must necessarily be influenced by the movement toward international unity, or at least toward unity of action in international matters.

More interesting and more important are the causes which are making the movement possible; for, if these causes are found to be of a permanent character, it is fair to assume that the movement will continue and ultimately result in some feasible and tangible international organization, although probably not in any close confederation of the states. If, on the contrary, the causes of the movement are found to be temporary, it may be expected that, however great its influence for the time being, it will not result in the creation of a permanent form of international organization, and that the relations of the nations will not be affected or modified. It seems, therefore, advisable to state briefly the steps by which the present international situation has been created or rendered possible.

Beginnings of Diplomatic Relations.—The present movement in its actual form was rendered possible by the Congress of Westphalia of 1648, which recognized the independence of the European states irrespective of their origin or the religious faith of their inhabitants. The claims of the empire and of the church to temporal and spiritual domination were rejected, and all states were placed upon the plane of independence and its corollary equality. Each member of the family of nations was thus, as far as circumstances permitted, able to develop itself, free from external control. Recognizing, however, the impossibility of living in isolation, the states appointed and sent diplomatic representatives to each other in order to maintain and regularize that intercourse which experience had proved essential to their well-being and development. Permanent legations and embassies were thus established to serve as the channel of communication. The appointment of consuls in the various countries facilitated commerce and commercial intercourse, and the independent states thus found themselves possessed of channels of communication both for political and commercial or industrial purposes. The independent states were thus brought into close and intimate contact. Their interdependence was thus being recognized in fact as well as their independence was admitted in law.

Diplomatic Congresses. — The fact that nations could not live in isolation, and that they were actually affected by occurrences in other states, is evidenced by the diplomatic congresses and conferences which date from Westphalia, such as Utrecht, 1713–15; Vienna, 1814–15; Paris, 1856; Berlin, 1878; Congo Conference at Berlin, 1885. These were official congresses in which the political interests of the various states were considered and an attempt made to establish them upon a permanent basis. In the nineteenth century the humanitarian aspect assumed large proportions, and official congresses or conferences met to consider not merely political questions, but questions affecting the well-being of the inhabitants of the world at large. Thus, in 1864 and 1868, two conferences were held at Geneva which framed the so-called Red Cross conventions; in 1868 a conference at St. Petersburg framed the declaration of St. Petersburg regulating instrumentalities of war; in 1874 a conference was held at Brussels which drew up the Brussels declaration concerning land warfare. These conferences, official in nature, were perhaps unconscious of the unity of interest which would become an axiom of modern life.

Pan-American Congresses. — The American states, although independent and tenacious of their independence and its corollary equality, have nevertheless recognized the movement which, beginning in Europe, has encircled the world. The Pan-American Congress of 1826 failed largely because it was premature. In 1889–90 the first Pan-American Conference met at Washington, a second at Mexico in 1901–2, a third at Rio de Janeiro in 1906, and a fourth has but recently closed its deliberations at Buenos Aires in the summer of 1910. These conferences are based upon the fact that, whether nations will or not, they must live in constant contact with each other; and the creation of a Pan-American union with a stately building at Washington is a visible evidence of the solidarity of American interests.

Increasing Unity of Action.—The congresses first specified were European; the second group is American. But the movement toward unity of action is no longer continental; it is international, and the first Hague Conference of 1899 and the second Hague Conference of 1907 are in themselves manifestoes of the new movement and a program of internationalism. The progress of the movement toward unity of international action is, however, perhaps better evidenced by the various unofficial gatherings which have characterized the latter half of the nineteenth century, and which are likely to be the chief feature of the twentieth. It is not merely that the enlightened nation looks beyond national lines and recognizes a fellow-worker in a common field. Each nation is seen to be dependent upon all others, and the inhabitants of each are influenced by the thought of all, and their material wants supplied by the most distant nations. The steamboat brought the old world and the new into close relation. The railway has made them, as it were, neighbors, and electricity has in no uncertain sense made one of all peoples. The changed condition of things has necessitated a change of view and a change of policy, and the world is therefore bound together by railway conventions, by postal conventions, by telegraph conventions, and other unions. The list of these various conventions, due to individual initiative in the first instance, is very large, as may be seen by Baldwin's article on *International Congresses and Conferences of the last century as forces working toward the solidarity of the world.* (*American Journal of International Law,* Vol. I, p. 565–78, and Reinsch's *International Unions and their Administration, ibid.*, p. 579–623; *ibid.*, Vol. III, p. 1–45.)

Grouped together, these various

congresses and conferences and unions show a unity of action along political and industrial lines. Recent events point to concerted action in the administration of justice which is seen to interest all, and therefore to be a proper matter for international consideration and regulation; and the same influences which have produced political congresses, and which have framed industrial and commercial conventions, are forecasting the pacific settlement of international disputes by well-recognized and international principles of justice.

The Law of Nations.—A system adequate to the needs of a progressive community must be the result of growth, and requires a very high level of intelligence. This is equally true between, as within, nations, and a system of international law did not come into existence until a few years before the Congress of Westphalia (1648). In 1625 Grotius systematized the principles of international law, and published a survey of the laws of peace and war in his immortal three books on the *Law of Peace and War*. The acceptance of these principles by the enlightened of all countries and their incorporation into the practice of nations supply a law which is universal as well as international, and progress is being made toward an authoritative interpretation of the law of nations. Arbitration requires for its successful operation a high degree of civilization, for nations have been unwilling in the past, and doubtless will be unwilling in the future, to submit the determination of questions to arbitration unless reasonably satisfied that a common sense of justice will produce approximately the same results. This is shown by the limited scope of arbitration in the ancient world. Rome could not arbitrate because its purpose was to dominate, that is, decide for itself questions as they arose. The various Greek states would not arbitrate with the Asiatic peoples because they regarded them not merely as inferiors, but as people governed by fundamentally different systems of law. They could, however, arbitrate disputes among themselves because a sense of race unity, a common language, and a common level of intelligence, recognizing and applying fundamental legal conceptions, rendered it comparatively easy for them to submit differences to arbitration—at least easier than in the case with foreign peoples, whom they scorned as barbarians. The steamboat, the railway, and electricity have brought the nations into close contact. Constitutional systems of government are everywhere the rule, not the exception. A general standard of intelligence exists, the interdependence of one upon the other is recognized, and a common goal is before the eyes of all.

Hence it is that, since Jay's treaty of 1794, the resort to arbitration has been frequent and successful; hence it is that nations are binding themselves by general treaties of arbitration to arbitrate future differences as they arise; hence it is that the first Hague Conference created a permanent panel of arbitrators, improperly termed a permanent court of arbitration, from which a temporary tribunal may be selected; hence it is that the second Hague Conference adopted a convention for the establishment of an international prize court, and framed a convention for the establishment of a court of arbitral justice, leaving to the nations, through diplomatic channels, the method of selecting the judges.

Arbitration, no longer a temporary expedient, is to be frequent; and the compromise supposed to be inherent in arbitration is to give way to a judicial determination of international disputes by the application of principles of justice common to all members of the family of nations.

It is becoming increasingly evident to the people of all countries that just as national peace was secured by the enactment and administration of just laws, so the peace of the world is to be secured by the application of principles of justice universally accepted. The movement toward peace is no longer confined to a few nations. but is the professed desire of many, if not all; it is, however, a peace to be founded upon justice and its judicial as well as judicious administration. The movement toward unity of action is seen to be based upon universal causes, and the various evidences of it which each successive year manifests are the links in the chain of development. A mere enumeration of recent conferences principally of a private or semiofficial nature shows that the most varied elements of our life are being internationalized; thus:

Sept. 21, 1909, the International Geodetic Congress opened its eighteenth triannual conference at London.

Sept. 22–26, 1909, the International Maritime Committee met at Bremen.

Sept. 28–Oct. 3, 1909, the Maritime Law Conference met at Brussels.

Oct. 11, 1909, the International Convention relating to the circulation of automobiles met at Paris.

Oct. 17–24, 1909, meeting at Paris of the International Congress for the repression of adulteration of alimentary and pharmaceutical products.

Nov. 16–17, 1909, the International Congress of Editors, at Paris.

Dec. 19, 1909, the International Institute of Agriculture, at Rome.

Jan. 1, 1910, the International Office of Public Hygiene, at San José, Costa Rica.

March 28, 1910, the Institute of International Law at Paris.

April 18–29, 1910, the International Conference for Suppression of White Slave Traffic, at Paris.

April 20–May 3, 1910, the International Congress of Horticulture, Berlin.

May 8, 1910, the Congress of International Associations, at Paris.

May 9, 1910, the International Association of Academies, Rome.

May 14–22, 1910, the International Congress of Botany, Brussels.

May 18, 1910, the International Aeronautic Conference, at Paris.

May 20–23, 1910, the International Congress on Tropical Agriculture, Brussels.

May 31–June 2, 1910, the First International Aerial Law Congress, Vienna.

June 2–5, 1910, the International Congress on Industrial Property.

June 23, 1910, the International Conference on Bills of Exchange, The Hague.

July 4, 1910, the International Railway Conference, Berne.

July 10–Aug. 25, 1910, the Fourth Pan-American Conference, at Buenos Aires.

July 18–22, 1910, the Seventh International Conference of Editors, Amsterdam.

July 24–26, 1910, the Second International Congress of the Periodical Press, Brussels.

July 27–31, 1910, the International Conference on Administrative Science, at Brussels.

Aug. 2–7, 1910, Third International Congress of School Hygiene, Paris.

Aug. 29, 1910, International Socialist Congress, Copenhagen.

Sept. 12, 1910, International Maritime Conference, Brussels.

Sept. 10–14, 1910, Permanent International Commission for the Study of Diseases of Occupation, Brussels.

Nov. 16, 1910, The World's Christian Citizenship Conference, Philadelphia.

PARTICULAR FOREIGN RELATIONS

INTERNATIONAL COMPLICATIONS

Arthur K. Kuhn

The Balkan Situation.—Early in the year a revolt of the Albanians threatened for a time the peace of the western provinces of Turkey. The governments of her neighbors to the north fortunately gave no cause for complaint, and the four Powers lent their moral support in the suppression of the disturbance. Servia, still smarting under the events of 1908, has now every interest in cultivating friendly relations with the Porte, for, since the closing of her western frontier by Austria-Hungary, the only practical route to the seaboard is over the railway from Nish via Uskup to Salonica, which Turkey has under complete control. Likewise, access to the Adriatic lies through Turkish territory. *Pourparlers* for the building of a railroad have been going on with a French company, and though very little active support has been given at Constantinople, no specific objection has been raised.

The visit to Belgrade and Sofia of the Turkish heir-apparent was outwardly a sign of a better political understanding and presaged the settlement of pending questions. Racial antipathy, however, still plays too large a rôle in the Balkans to predicate any permanent change in the attitude of the masses. Thus, the Albanian revolt put a strain on relations with Bulgaria, as the Macedonian colony began to give certain support on account of the repressive measures which the Turks found to be necessary in Macedonia. Bulgarian political clubs were suppressed, the curriculum of instruction in Bulgarian schools was controlled, domiciliary visits undertaken, and Bulgarian districts colonized with Bosnian *mohajirs*. As soon as it became clear that the revolt had no better chance of success than that of 1903, Bulgarian support was withdrawn.

Official relations, to all appearances, were not seriously affected by these events. Indeed, it is understood that negotiations for a commercial treaty are under way to effectuate the plan for uniting the Bulgarian and Turkish railway systems between Kumanova and Kostendil.

Roumania has steadily kept aloof from all complications in the Balkan peninsula. Recently a closer friendship with Turkey has been observed, which is easily explainable in view of her lack of good will toward Greece, with whom she has for some time past severed diplomatic relations.

The elevation of Montenegro in Sept. to the dignity of a kingdom, on the act of the sovereign, *sponte sua*, is but further evidence of the awakened self-consciousness of the Balkan Slavs.

Though the situation on the mainland may be said to have improved, a certain gravity has been imported into Near Eastern problems by a recrudescence of the Cretan dispute.

Since the Greco-Turkish war of 1897 the Cretans made rapid progress toward practical autonomy under Turkish nominal suzerainty. However, since the union with Greece proclaimed by the Cretans in Oct., 1908, was vetoed by the protecting Powers, the Christian part of the population has become impatient. In May of the present year the Cretan Assembly was opened in the manner of a Greek Parliament, an oath of allegiance was taken to the King of the Hellenes, and the Mohammedan deputies, who refused to take the oath, were excluded. As a result of the disorders which ensued and on representations from the Porte, the four Powers, on July 8th, through their consuls, addressed an ultimatum to the Cretan Government which resulted in the admission of the deputies. The entire course of events has naturally greatly aroused the susceptibility of the Turks and a boycott of Greek goods has been established, especially in ports along the Black Sea. Furthermore, the Porte has declared that the admission of Cretan deputies to the Greek National Assembly would be deemed a *casus belli*.

The maintenance of the *status quo* in Crete threatens to become more and more difficult. The continuance of Turkish suzerainty seems to be a question of national honor with the Young Turk party. Though the protecting Powers, especially France and Russia, appear to be in favor of a definite solution, which could hardly be favorable to Turkey, the uncertain attitude of Germany and her ally, who withdrew from the concert in 1897, and the danger of precipitating a general European disagreement in the event of a second war with Greece, make for a temporizing diplomacy in Cretan affairs.

The Persian Situation.—The relations of Great Britain and Russia with reference to Persia were defined by the convention of Aug. 31, 1907. By its terms the northern half of Persia was described as that in which Russia had the exclusive right of acquiring political and commercial concessions, while Great Britain's sphere of influence was marked off to the southeast, fronting on Afghanistan and Beluchistan, and from the north point of the Afghanistan frontier south of a line to Bunder Abbas. The balance of Persian territory was recognized as neutral, and each party agreed not to oppose grants of concessions therein to the other without previous arrangement. Both parties agreed "to respect the integrity and independence of Persia."

The change of political conditions following the success of the Nationalist Party in 1909 has resulted, in part, to the detriment of Russia, in that the late shah was distinctly favorable to Russian interests. On the other hand, the disorder attendant upon the establishment and consolidation of the new government has opened the way to the occupation of Persian territory by Russian troops in the neighborhoods of Tabriz, Ardebil, Resht, and Khasvine. Though doubtless the dispatch of troops was required for the protection of Europeans, the continuance of the occupation beyond the time necessary to preserve order has caused uneasiness both to the national government as well as in certain European capitals. During Aug. it became known that the Russian Government was insisting upon certain conditions to the withdrawal of its troops. What the nature of these conditions was has not been ascertained, though it was believed to have been the granting of certain commercially valuable concessions. As Russia preceded her occupation by a declaration to the European Powers of the conditions on which the troops were introduced, which related solely to the preservation of order, it is not probable that the Mejliss can be induced to grant any considerable favors at this time, and will prefer to rely on pressure brought upon Russia from other sources.

The national government has made determined efforts to establish peace and order, but in doing so has labored against tremendous difficulties. Some of the native elements most responsible for the success of the nationalist cause had become so turbulent as to require the use of force against them by the new government. Cabinets have succeeded one another with startling rapidity, and the continuance of tribal jealousies, often stimulated by interested parties, has more than once throughout the year threatened a reaction. The plan of the present ministry is to associate with itself foreign counsellors, mainly French, the organization of a strong military force for the preservation of order and the constitution of an independent judiciary.

Meanwhile, commercial interests, especially in the British sphere, have suffered terribly from the harassment of natives along trade routes and the prevalence of smuggling. Persian anarchy, once denoted "peaceful," can no longer be so considered, and, until the British note of Oct., complaints of the weakness of British policy were frequently heard from the merchant class.

In May, Germany made certain inquiries, both at London and St. Petersburg, as to the intentions of these Powers, which led to the belief that a similar diplomacy would be pursued by her as in respect of Morocco. This was unfounded. The German Government, at least for the present, seems to be acquiescent in the predominance of British and Russian political influence in Persia, but insists upon complete protection to her treaty rights. German interests are also seeking to build a link connecting the Bagdad railway with northern Persia and Teheran, in spite of the difficulty in financing the construction of the main line. An old agreement making railway concessions subject to the consent of the Czar's ministers expired during the year, and Germany has thus taken time by the forelock.

Almost simultaneously with this movement, the Mejliss rejected the proffered Anglo-Russian loan. Though the two events were not directly connected, it cannot be doubted that the appearance of a third Power on the scene would give moral support to the Persian leaders, and would induce them to hold out for better terms in this, as well as in other matters.

As efforts to restore order from within have gradually proved futile, Great Britain now sees herself compelled to take forward steps to prevent the loss of her trade. In Oct. a diplomatic note amounting to an *ultimatum* was addressed to the Persian Government threatening to take over the policing of the southern caravan routes and to levy a surcharge upon the customs of ten per cent to pay the upkeep of the necessary force. As the territory mentioned in the note extends beyond the British sphere, Russia's consent was doubtless secured beforehand. That this foreshadows an end to the political integrity of Persia has been asserted by German critics, but is vigorously denied both in London and in St. Petersburg.

The great changes which have occurred since 1907 and the present unsatisfactory condition of Persian affairs, both external and internal, would seem to indicate the necessity of a new *entente* between the Powers most deeply interested in the maintenance of peace and security beyond the Caucasus.

Great Britain and Germany.—No question of a seriously contentious nature has disturbed the diplomatic relations of Great Britain and Germany during the past year. Such differences as may be noted between the two countries lie mainly in the psychological trend of public opinion. Undisturbed peace between the two peoples dates back to the Middle Ages, and the periods intervening have often witnessed cordial friendships and even strong alliances. The consolidation of the German nation, however, and the political and commercial rivalry which necessarily followed her rapid progress are alone quite sufficient to account for the change from the traditional attitude of friendship to one of guarded suspicion. The strong nationalism of Bismarck did much to arouse an antipathy of mental process which is still observable at the present time.

It is mainly Germany's remarkable increase in naval strength which has led to the wide-spread apprehensions in respect of her intentions toward Great Britain. Since 1905, when Germany determined to complete the balance of her rigidly fixed quota of fifty-eight capital ships with vessels of the Dreadnought type, her relative strength has moved upward, especially as Great Britain's program for 1908–09 was reduced to only two new armored vessels. Great Britain has thus been compelled to increase her new construction to eight in 1909–10, with five more for 1910–11. Furthermore, the maintenance of a two-power standard, with squadrons at full strength composed of vessels not more than fifteen years old would require the construction of six battleships annually until 1916.

Fortunately, events during the past year have indicated that extraordinary increases in naval estimates are distasteful to the parliamentary majorities in both countries. Nor has the year been lacking in other hopeful signs. On July 14th the British Premier declared in the House of Commons that the government did not consider the expansion of the German Navy as unfriendly to Great Britain, while, on the other hand, Prince Henry of Prussia, on his visit to England in Feb., adopted a most conciliatory attitude, probably with authority, and expressed the hope that the British nation would repose confidence in his sovereign and government.

It is true that the German emperor has aroused British susceptibilities on more than one occasion during the year, latterly during the progress of a speech at Königsberg in Aug. But considerably less importance is now given to his personal utterances than at the time of the famous Kruger telegram of Jan. 3, 1897. It will be remembered that an unguarded interview in 1909 with an American newspaper correspondent resulted in what amounted to a ministerial disclaimer in the Reichstag. The Königsberg address met with almost unanimous censure on the part of the German press. Thus divested of support at home, British sentiment is now more inclined to consider these occasional outbursts as the exhortations of a military leader to his *entourage* for the purpose of inducing the maintenance of a high state of efficiency. Furthermore, the conduct of the emperor on the occasion of the late king's death in May left no doubt of his sincere respect for the British sovereign, and created an excellent impression on the popular mind.

Strong efforts are being made in both countries toward international conciliation. The latest of these is the so-called Anglo-German Friendship Movement, with a propagandist joint committee composed largely of the clergy, operating on both sides of the North Sea.

The "isolation" of Germany which has resulted from the British alliance with Japan and the *ententes* with France, Russia, and Spain, has caused a certain circumspection in German diplomacy of which the Moroccan and Persian situations are but the outward symbols. But some of these alliances have not grown stronger during the past year, and the Russo-Japanese *rapprochement* of July in the Far East, taken together with Russia's somewhat tightened grip in

Persia, has disarranged the balance of interests.

The arrests made in Sept. of British subjects at Borkum and of a German officer at Portsmouth, on charges of espionage, have created, as these occurrences always do, a feeling of unrest, but in the absence of proof that the acts were the result of official inspiration, their importance is apt to be exaggerated.

The arbitration treaty agreeing to refer to The Hague tribunal legal disputes and questions relating to the interpretation of treaties was renewed (ratifications Sept. 23, 1909) for a further period of five years, to July 12, 1914.

The Dreibund.—The third renewal of the Triple Alliance (Berlin, June 28, 1902), and the lapse of six years without denunciation, have extended the period of the agreement to June 28, 1914. Though its text has never been published, its tenor may be gathered from the text of the original Austro-German compact of 1879, to which Italy adhered in 1882. It will be remembered that the parties engaged "never to give any aggressive tendency whatsoever to their purely defensive agreement." Though its express terms were directed against a possible attack by Russia, it was really designed to forestall any French policy of revenge for the losses of 1871.

Since the *rapprochement* between the Latin powers of Europe, especially of France and Italy, the interests which Italy retains in the alliance have weakened, both from the historical and the practical viewpoint. Though joining her northern allies voluntarily, she did so with the expectation of their support in her North African policy. In this she was disappointed and recent events have not strengthened her enthusiasm.

The Austrian *coup* of 1908 in the Balkans was distinctly hurtful to Italian commercial interests. The last impediment to a direct Austrian route to the Mediterranean was removed, thus threatening the Brindisi route to Egypt, India, and the East. This, together with a general loss of Italian prestige in the Balkans has aroused much bitterness. Unfriendly demonstrations against Austrians were made in June and July in Milan, and along the frontiers of Lombardy. The determination on the part of the Austrian Government to build four vessels of the Dreadnought type was taken by the European press as a warning to Italy.

Though Italy has apparently little to gain from her adherence to the alliance, no outward sign of disaffection has been given. On Aug. 31st an official *communiqué* was published of a meeting between Count Aehrenthal and the Italian minister for foreign affairs, the Marquis San Giuliano, at Salzburg, wherein it was stated that both governments were in entire accord on the general situation in Europe and for the maintenance of the *status quo* in the Near East. Great cordiality was also manifested on the occasion of the visit of the German Chancellor to the King of Italy in March, as well as upon the German emperor's visit to the Viennese court in Sept.

The latter event occurred coincident with the refusal of the Porte to complete the negotiations for a French loan and with rumors of a military convention with Roumania. Accordingly, discussion was rife as to the probability of an addition to the Triple Alliance by the forces of the Ottoman Government. Though Germany and Austria have been manifestly friendly to the new régime, this *dénouement* would be objectionable not only to their southern ally but also to the centrist parties at home. It would be logical only in the event of a more vigorous intervention in the Balkans on the part of Russia.

The attitude of Great Britain toward Austria in 1908 upon the annexation of Bosnia and Herzegovina, contrasted with the vigorous support given to Austria by Germany, undoubtedly strained the traditional cordiality existing between Vienna and the court of St. James, and placed Austria under lasting obligations to Germany. That Great Britain is now anxious to make amends may be fairly drawn from the selection of Lord Rosebery and his visit to Vienna in Sept. as special ambassador to announce the accession of King George.

The strengthening of the Triple Alliance is perhaps the keystone to German foreign policy. The change which during the year occurred in the foreign office, Herr von Kiderlen-Wächter replacing Baron von Schön, was but another indication of that policy. The latter was suspected of partiality to France through his opposition to the Mannesmann claims in Morocco, while the former found in his appointment his due reward for his vigorous support of Austria's Balkan policy in 1908.

Manchuria.—The past year has witnessed the accomplishment of a closer understanding between the late contending Powers in Manchuria. Accordingly, China's difficulties in the maintenance of her sovereignty have increased. In Nov., 1909, the Chinese Government called the attention of the Powers to violations by Japan of the "open door" along the line of the South Manchurian railway and to the free importation of Japanese goods through Dalny and Port Arthur. Similarly, a protest was made against Russia in the month following for her attempt to assume administrative control in towns along the line of the Chinese Eastern Railway. As the United States is practically the only Power whose interests on the mainland of Asia are purely commercial and as Germany and Great Britain are prevented by political conditions from attempting any intervention, the State Department felt it incumbent upon the United States to take the initiative in preventing further aggressions by the nations claiming special interests.

On Jan. 4 the Secretary of State addressed a memorandum to China, France, Germany, Great Britain, Japan, and Russia proposing the neutralization of the railway by its sale to China, financed by an international syndicate in the interests of a purely commercial administration of the property, with a prohibition against its use for the transportation of troops and munitions of war. The participating Powers were to operate the railway system during the period of the loan and be preferred in the purchase of materials.

This proposal found acceptance on principle by Germany and Great Britain, but met with no favor either with Japan or Russia, though its acceptance would have materially lessened the heavy financial burdens resting on both of them in respect of the railway. The reply of Russia recognized on principle the integrity of China and its sovereignty in Manchuria. The rejection of the proposal was based upon the material loss to Russian commercial interests which such a course would entail, especially by reason of enterprises collateral and incidental to the building of the line, which, it was urged, would suffer in the event of its control by other interests.

It was hardly to be expected that the proposition should have been acceptable to the parties to the Treaty of Portsmouth as it would have materially altered the *status quo* created by that treaty. Furthermore, the double tracking of the Trans-Siberian line has rendered the North Manchurian section a still more vital link in the chain connecting European Russia with the Pacific.

In July the text of a new Russo-Japanese agreement was published by which, in terms at least, complete coöperation is established over their respective spheres of influence in Manchuria and by which the *status quo* is to be maintained not only between Russia and Japan, but also between either of these Powers and China. (Article II.) The first article repeats the understanding for coöperation in the development of their respective railway systems in Manchuria. This was embodied in Article VIII of the Treaty of Portsmouth, and was already practically effected by the Russo-Japanese railway agreement of July 28, 1907. The third and final article provides that in case of any menace to the *status quo*, the parties shall consult each other. Accordingly, the treaty guarantees a *status quo* embodied in a multitude of treaties and declarations entered into not only between the contracting Powers themselves, but also between either or both of them and China and between China and the other Powers.

The indefiniteness which thus ensues leads to the belief that besides the articles made public, certain secret clauses were agreed upon, the nature of which can only be surmised. This belief is somewhat justified by reason of the previous practice of the parties. Thus the treaty between China and Japan of Aug. 24, 1909, confirms an undertaking by China not to construct any railways in the vicinity of, or parallel to, the South Manchurian line. The fact that this undertaking is stated to be contained in China's declaration of Dec. 22, 1905, called attention to the fact that no such provision was contained in the treaty of the same date.

That the treaty completely evidences a broad understanding between Russia and Japan in the Far East was promptly demonstrated by the annexation of Korea on Aug. 22d. The political significance of the treaty, however, is not confined to the Far East, for it leaves both Powers a freer hand in other quarters. Russia again becomes an element in European politics. France finds much encouragement in the new situation. Russia's enormous borrowings from her ally were followed only too rapidly by the denudation of troops on her western frontier. With the hand of Russia freed in Asia, a new significance is given to the Dual Alliance. The Slav states of the Balkans now also look to Russia for a stronger moral support. Great Britain, on the other hand, must regard with misgiving an agreement which ignores her completely. The Anglo-Japanese alliance must weaken when its *raison d'être* disappears, and for the future a closer understanding with the United States, at least on Far Eastern *commercial* issues, would seem a natural, if not a necessary, consequence of recent events.

The treaty marks a still further advance of the process which has been described as grinding the sovereignty of China in Manchuria between the upper and the nether millstones. The Manchurian question has resolved itself into one of railway control. The import of railway financing upon political conditions is fully realized at Washington as was demonstrated by the demand for American participation in the Hukuang loan. Such loans are usually supported by an imperial guarantee and are sometimes secured by pledge of provincial revenues, thus presenting to the participants an entering wedge for preferential claims within particular spheres. Until the Manchurian railways cease to be pawns in the game for political supremacy and become merely advance agents of a better civilization and freer commercial opportunities, the peace of the East cannot be considered as resting upon a secure foundation.

The Congo.—The promulgation on Oct. 18, 1908, of the Belgian law effecting the transfer of the Congo Free State to the Kingdom of Belgium marked a new epoch in the history of that immense territory. The late king had long been a pronounced opponent of annexation, and among other things disputed the right of the Belgian Parliament to act in the matter without the consent of the Congo. Even when finally compelled to retreat from his position, much of the good which annexation was intended to accomplish was counteracted by acts of the Crown calculated to exclude large areas from the effects of the new régime so as to reserve them for the benefit of the private interests of the monarch. This was accomplished by the grant of important concessions just prior to the annexation and by segregation from the Crown Foundation of certain of its assets.

Notwithstanding these disappointing features, the past year has witnessed material improvement. Immediately following the visit to the Congo of M. Renkin, Minister for the Colonies, in Sept., 1909, the government outlined a new policy, the principal features of which were approved in connection with the budget for 1910. The old system of exploitation is to be replaced by opening state lands for private ownership and on leasehold to the natives for development on their own initiative. It is proposed to accomplish this over a number of years in three geographical stages. While the territory thus affected is extensive, the land embraced in concessions already granted is, of course, excluded from the influence of these reforms.

It is further proposed to suppress certain taxes restrictive of commerce and to make all taxes payable in money. The government also pledges itself to build new schools, to encourage missions, and to vigorously pursue its sanitary work.

This policy of reform has, to a certain extent, appeased the unfavorable public sentiment for a long time prevalent in Great Britain and elsewhere, though Sir Edward Grey, responding to inquiries in the British Parliament on March 10, 1910, deplored the delay in making the government's plan effective and regretted that the abolition of forced native labor applied to state lands only. He declared, furthermore, that the maintenance of much of the old personnel of administration in the Congo was not calculated to inspire confidence. The British Government would therefore withhold official recognition of the annexation until forced labor was everywhere abolished and the country opened to foreign commerce.

In Feb. a commission appointed by Belgium, Germany, and Great Britain met at Brussels and agreed upon a delimitation of the northeastern boundary of the Congo. A protocol was signed May 14, 1910. The western line of the German possessions follows the Rusisi, crosses Lake Kivu and the Verungo chain to the Sabinio peak, which constitutes the point of intersection of the boundaries of the Congo, the German, and the British possessions. The western frontier of the British possessions is marked by Lakes Edward and Albert and the Semliki River.

A further dispute between Belgium and Great Britain relates to the demarcation of the 30th meridian and is the subject of a separate arrangement.

The new monarch, King Albert, who, while heir-apparent, made a thorough inspection of the colony in the summer of 1909, has declared strongly in favor of reform, notably at the opening of the Congo Museum in Brussels (May 14, 1910). His remarks, however, were lacking in definiteness. Parties to the Berlin convention of 1884 have become wary of platitudes.

The United States, the first nation to recognize the flag of the Congo Free State (April 22, 1884), in express contemplation of "the humane and benevolent purposes of the International Association of the Congo" has now, in view of the course of events since that period, adopted a more cautious diplomacy. The State Department, while hopefully viewing the transfer of the Congo to a responsible European state, has insisted upon the introduction of those reforms the principal features of which, as described in the memorandum presented to the Belgian Government on April 7, 1908, may here be outlined as constituting the continuing aim of American diplomacy in Central Africa, to wit:

(1) The exemption of the native population from excessive taxation.

(2) The inhibition of forced labor.

(3) The possibility of the natives becoming holders in permanent tenancy of tracts of land sufficiently large to afford sustenance.

(4) The possibility for traders and settlers of all nationalities to secure unoccupied tracts of land at reasonable prices for the prosecution and development of peaceful commerce.

(5) The maintenance of exact justice through the establishment of an independent judiciary.

JAPAN

JAMES BROWN SCOTT

During the year of 1910 three events have taken place in Japan of a distinctly international character, and which show the general policy of Japan as well as its special policy in Korea and Manchuria.

The first was the denunciation on July 17, 1910, of the commercial treaties of Japan with European nations. The treaty with the United States, concluded on Nov. 22, 1894, was not denounced, apparently for the reason that the twelve years specified in Article XIX have not yet expired. The purpose of Japan is to subject these treaties with foreign countries to a revision in the light of present conditions, and as far as possible to adopt uniform provisions in matters susceptible of uniform treatment, and to reserve the right to levy protective duties when desirable. The underlying desire which prompts the revision is to regain the tariff autonomy, which it had sacrificed by the provisions attached to the various treaties. For example, some 150 specified products are to be subject to fixed rates of duty when imported into Japan. The treaty with the United States does not contain tariff provisions, nor has it annexed to it a tariff schedule, but, inasmuch as the treaty contains the favored-nation clause (Article XIV), the United States has the benefit of the treaties with foreign countries "in all that concerns commerce and navigation." The attitude of Japan in this respect is the attitude of a self-respecting nation which, realizing its importance in the world, seeks to free itself from treaty provisions which have either become inadequate, burdensome, or inconsistent with its sense of national prestige.

The second event is the annexation of Korea to Japan, which took place Aug. 29, 1910. The absorption of Korea is a matter of very great importance to Japan, for it strengthens its foothold upon the Asiatic continent by incorporation with the empire, a realm which hitherto was under its protection. The action of Japan was foreseen, as the conditions obtaining in Korea as the result of the Russo-Japanese War made its annexation a logical consequence. The independence of Korea after its separation from China was an independence in theory, not in fact. It was doomed to fall into the lap of Russia or Japan; and as Japan proved to be the stronger in its contest with Russia, the Hermit Kingdom has become Japanese. The treaty of Nov. 17, 1905, between Japan and Korea established a protectorate of the former over the latter, because Japan, by the treaty, took charge of the external relations of Korea, which agreed not to conclude any act or engagement of an international character except through the intermediary of Japan. Dec. 20, 1905, Japan established a residency general in Korea, which act was a natural consequence and logical development of the status created by the treaty of Nov. 17, 1905. The treaty of 1905 and Japan's ordinance of Dec. 20th of the same year practically annexed Korea. The treaty between Japan and Korea, dated Aug. 29, 1910, made the annexation of Korea complete in law as it really was in fact. By the first article of the treaty of Aug. 29, 1910, the Emperor of Korea "makes complete and permanent concession to his Majesty, the Emperor of Japan, of all rights of sovereignty over the whole of Korea"; and in Article II Japan "accepts the concession mentioned in the preceding article, and consents to the complete annexation of Korea to the Emperor of Japan." The Hermit Kingdom has ceased to exist as a member of the family of nations. The Province of Chosen, as the former Kingdom of Korea is called, henceforth forms a part of the Empire of Japan. (See the text of the proclamation and rescript attached to it in *American Journal of International Law,* vol. iv, supplement.)

The third event is the treaty of July 4, 1910, between Russia and Japan. It is based upon the treaty of July 30, 1907, in which the two countries engaged to respect the territory and integrity of the other "and all rights due now to both parties by virtue of treaties, conventions, and contracts now in force between them and China" (Article I), and "to recognize the independence and territorial integrity of the Empire of China and the principles of equal opportunity for the commerce and industry of all nations with that empire, and engage to uphold and support the maintenance of the *status quo* and the respect for the said principle by all pacific means at their disposal" (Article II).

The treaty of July 30, 1907, is, however, completed by three paragraphs, in the first of which the contracting parties "agree to extend to one another their friendly coöperation with a view to the improvement of their respective railway lines in Manchuria and the perfecting of the connecting service of the said lines, and to abstain from all competition prejudicial to the realization of this object." Coöperation and abstention would seem to mean that each country is to have a free hand within its sphere of influence in Manchuria. In the second article "each of the contracting parties undertakes to maintain and respect the *status quo* in

Manchuria resulting from all the treaties, conventions, and other arrangements concluded up to this date, either between Russia and Japan, or between these two powers and China." The third paragraph of this important document suggests not merely an exchange of views and an understanding as to the aims and purposes of each, but something closely resembling an alliance for their realization. The exact text is as follows: "In the event of anything arising of a nature to threaten the *status quo* mentioned above, the two high contracting parties shall enter each time into communication with each other with a view to coming to an understanding as to the measures they may think it necessary to take for the maintenance of the said *status quo*." (*American Journal of International Law*, vol. iv, supplement.)

On July 21, 1910, China acknowledged and approved the Russo-Japanese Convention which had been submitted to its government, as it was based upon, and not inconsistent with, existing treaty relations. (*American Journal of International Law*, vol. iv, supplement.)

LIBERIA

George H. Blakeslee

During the past year the United States Government has interested itself actively in the affairs of Liberia. This negro republic, founded by the joint action of the United States Government and the American Colonization Societies, occupies a territory slightly smaller than that of the State of New York. Its coast is settled by the descendants of the slaves and free blacks who came to the country from the United States before 1860. They and the natives whom they have civilized number about 50,000. The relatively vast back-country is occupied by 1,500,000 aboriginal savages, totally untouched by civilization. Inability to control these aborigines, especially along the border, has been the ostensible cause of recurring boundary disputes with Great Britain, whose colony, Sierra Leone, lies to the west, and with France, whose African possessions lie to the north and east. After losing to these two Powers about 150 of her 500 miles of coast line, Liberia, in 1908, officially requested the United States Government to aid it in maintaining its threatened independence. The following Jan., 1909, President Roosevelt recommended that the United States, in view of its moral responsibility for the welfare of Liberia, should send a commission to that country to investigate the situation.

This was done. The report of the commission, which President Taft sent to Congress March 25, 1910, states that "the Liberians have advanced, not retrograded in their civilization," they have always carried on an orderly government, have elected their best men to public office, and have given an effective administration to their coast towns and villages, where "law and order prevail, life and property are adequately protected, and crime is promptly punished." This negro republic, however, the commission finds, is yet too weak to protect its territory from the encroachments of its powerful neighbors, England and France. "Liberia is between the two, and it is the conviction of the commission that unless she has the support of some strong Power, commensurate in strength with Great Britain or France, she will, as an independent Power, speedily disappear from the map." In view of this critical situation, the commission recommends that the United States Government should take the following action: (1) It should extend its friendly aid to obtain from Great Britain and France a definite and just settlement of all boundary disputes. (2) It should temporarily take over the collection and control of the customs revenue. This practical guarantee of payment would prevent the foreign bondholders from inducing their governments to interfere in Liberia. (3) It should send American financial experts to assist in placing the badly managed internal finances upon a sound basis. (4) It should lend the aid of American army officers in organizing a military force strong enough to control the savage tribes along the borders. (5) It should establish a research station to undertake a systematic study of the resources of the country, especially of the Hinterland, which has great natural wealth, but which "is as little known to the Liberians themselves as to the world at large." (6) It should reconsider the question of establishing a coaling station in Liberia.

These recommendations received a hearty indorsement from President Taft. It was suggested by Secretary Knox that a treaty be negotiated permitting the American Government to carry out these reforms; but opposition on the part of certain United States senators will probably prevent this. The administration, however, is doing its utmost to aid Liberia along the lines suggested by the report. Upon its advice, Roland P. Falkner, the chairman of the commission, has now been appointed the special fiscal agent of the Liberian Government to raise new foreign loans and place the finances of the republic upon a sound basis. This is the first and most urgent need in the reorganization of Liberia.

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ARBITRATION AND PEACE

GEORGE H. BLAKESLEE

The Hague Tribunal.—During the past year the United States Government has been a party to two cases before the Permanent Court of Arbitration at The Hague. The first, relating to the Newfoundland fisheries, was the most important international controversy decided by the court since its organization by the first Hague conference in 1899. The right of the inhabitants of the United States to engage in the Newfoundland fisheries has been a well-nigh constant source of misunderstanding from almost the very beginning of the American Government. The treaty of Paris, 1783, by which Great Britain recognized the independence of the United States, granted its inhabitants the privilege of engaging in the British North American fisheries; but this right was later lost, the British Government claimed, in consequence of the outbreak of the War of 1812. The American Government denied this, and a vigorous controversy followed. The question was apparently settled by a new treaty negotiated in 1818. But the meaning of this treaty has been in almost continuous dispute during the ninety-two years since its ratification; and the present case was brought to The Hague to settle once and for all the various controversies in regard to its interpretation.

The treaty of 1818 recognized the absolute right of Americans to take part in the "deep-sea fisheries"—that is, to fish anywhere in North American waters provided it should be outside of "the three-mile limit" from the shore. It also granted the privilege of the "inshore fisheries"—that is, of fishing inside of "the three-mile limit"—along certain coasts, especially those of Labrador and of the western part of Newfoundland; here, in the words of the treaty, the Americans "shall have forever, in common with the subjects of His Britannic Majesty, the liberty to take fish of every kind." The United States, for its part, renounced any claim to fish "within three marine miles of any of the coasts, bays, creeks, or harbors . . . not included within the above-mentioned limits." Scarcely a year passed before a radical difference of opinion arose in regard to the meaning of "the three-mile limit." The United States contended that this imaginary line should follow the sinuosities of the coast, thus permitting Americans to fish anywhere, offshore or in bays or gulfs, provided their ships kept more than three miles from the nearest land. The British claimed that the line should be traced across the entrance of bays and gulfs, from "headland to headland," which would deprive Americans of the right to fish in bays and gulfs, even though these might be more than six miles in width. These disputes were sometimes temporarily settled by reciprocity agreements which opened most of the coasts of both countries to British and Americans alike. Such an agreement was in force from 1854 to 1866. Another continued from 1871 to 1886. But as soon as these lapsed, American fishing vessels were prevented by force from enjoying the privileges which they believed were theirs by treaty right. Since 1886 three different reciprocity treaties have been drawn up between the United States and Newfoundland, but not one of them was ratified. From 1904, the year of the failure of the last of these attempts, the controversy took on a more acute form. The Newfoundland Government withdrew all possible privileges previously granted or permitted, and insisted that the Americans should exercise no more than their bare treaty rights. It strictly regulated the fishing by rules which it insisted the Americans as well as the British should observe.

This led to the second fundamental controversy. Newfoundland claimed, since the treaty guaranteed to the Americans "the liberty to take fish *in common with* the subjects of His Britannic Majesty," that the Americans were obliged to obey all rules and regulations binding upon the British. The Newfoundland Government, therefore, limited the fishing season, forbade Sunday fishing, and prescribed certain kinds of nets—all regulations objectionable to the people from New England. Further, it passed discriminating laws, which required American vessels to formally enter and clear from the customhouses, to pay harbor and light dues from which the local vessels were exempt, and which prevented them from either hiring Newfoundlanders as members of their crews or buying bait in Newfoundland jurisdiction. The United States claimed that it was the right of fishing, which was granted "in common," and that neither government could limit this right for the other. The United States, in short, claimed that no laws or regulations in regard to the North American fisheries could be enforced against its people without its previous consent. Actual disorder along the Newfoundland coast was prevented by temporary agreements which regulated the fishing for a single season at a time.

In 1908 Great Britain and the United States ratified an arbitration convention by which they bound themselves to refer to The Hague Court all differences which they could not settle by diplomatic means, provided these differences did not "affect the vital interests, the independence, or the honor of the two contracting states." It was in accordance with this treaty that the two governments submitted to the decision of The Hague a series of seven questions which involved all of the differences existing between them in regard to the interpretation of the treaty of 1818. The case was argued at The Hague during the past summer, the most notable feature being the remarkable six-day speech of the leading American counsel, Senator Elihu Root. The court consisted of five judges: Dr. Lammasch, of Austria, president; Judge George Gray, of Delaware; Hon. Charles Fitzpatrick, of Canada; Dr. Drago, of Argentina, and Dr. Savarin-Lohman, of Holland.

The decision was given Sept. 7th. Its seven questions and answers may be summarized as follows:

(1) May Great Britain or Newfoundland make regulations for the fisheries without the previous consent of the United States? Decision—Yes; but all rules must be reasonable, just, and without prejudice against Americans. The decision as to whether they are reasonable and just does not rest with Great Britain, but, in case of controversy, must be passed upon by an international commission of experts, the composition of the commission being suggested by the court.

(2) Do American fishing vessels have the right to hire as members of their crews persons not inhabitants of the United States? Decision—Yes.

(3) Can the right to "take fish" and to "dry and cure fish" be subjected, without the consent of the United States, to the requirements of entry or report at customhouses, or the payment of light or harbor dues, or to any similar condition? Decision—No, provided these are not also imposed equally upon British fishermen, and with the further proviso that American ships may be required to report informally upon arrival or leaving, if it is reasonably convenient for them to do so.

(4) Is it permissible to impose restrictions making the exercise of the right to enter certain bays or harbors for shelter, repairs, wood, and water, conditional upon payment of light or other dues, or upon entering of reporting at customhouses? Decision—No; but American ships may be required merely to report, provided it is reasonably convenient to do so.

(5) "From where must be measured the three marine miles of any of the coasts, bays, creeks, or harbors?" Decision—The line follows the sinuosities of the coast, except, in general, in the case of bays which are not over ten miles wide; here the line is measured from "headland to headland."

(6) Have the American fishermen the right to fish in the "bays, harbors, and creeks," as well as along the coast, of the part of Newfoundland where they have been granted the right to the inshore fisheries? Decision—Yes.

(7) Are American fishing vessels entitled to have, when duly authorized by the United States, the commercial privileges on the treaty coasts accorded by agreement or otherwise to United States trading vessels generally? Decision—Yes, provided the treaty liberty of fishing and the commercial privileges are not exercised concurrently.

It is generally considered that the decisions favor the United States in five of the seven questions, and Great Britain in two—the first and the fifth—but that these latter are the more important. The decisions were so qualified in most cases, however, that it is difficult to state which side has gained the advantage. The London *Times* well remarks of the decision, that "its favors are, on the whole, impartially distributed. . . . All seem to have secured the points most essential to their case."

The most remarkable feature of the decision is that it was practically unanimous, the only exception being that Dr. Drago dissented from the view of his colleagues on question five. The British and the American judges both voted together on every one of the seven awards. The decision has been accepted by both countries with general satisfaction. The whole case shows, in a striking way, the value of The Hague Court as a satisfactory means of bringing about an equitable settlement of a complicated, long-standing, and embittered controversy.

The Venezuela Arbitration.—In Sept., the same month in which the fisheries decision was rendered, the counsel for the United States and for Venezuela began their argument of the Orinoco Steamship Company case, before The Hague Court.

During the administration of Pres. Castro, his government confiscated or sequestered property belonging to Americans, and canceled concessions previously granted to American companies. The injustice seemed so glaring that the United States made repeated efforts to have the claims of the injured parties either settled diplomatically or referred to arbitration. When Venezuela continued her refusal to arbitrate, the United States, in June, 1908, recalled its minister and severed diplomatic relations. Soon after this Pres. Castro lost power, and the new executive, Acting Pres. Gomez, acquiesced in the demands of the American Government. Of the five cases under discussion, four have already been settled diplomatically—in two Venezuela agreed to pay a total sum of $860,000 rather than take the chances of submitting them to arbitration. The Orinoco Steamship Company, whose case was taken to The Hague Court, claimed that its exclusive franchise to navigate the mouth of the Orinoco had been unlawfully destroyed, and that an extension of its charter had been wrongfully annulled. The case was first submitted to arbitration in 1903, when the umpire awarded the company $28,000 damages, in place of about $1,400,000 which was claimed. The United States Government was dissatisfied on the ground that the umpire had disregarded the terms of the protocol of submission, and had made his decision in opposition to its express terms. (The chief interest of the present case lies in the fact that it was a resubmission of a claim previously arbitrated. The first point upon which The Hague Court passed was whether there was sufficient ground for setting aside the award of 1903.) In its decision, given Oct. 25th, the court annulled this earlier award in four points, and found the Orinoco Steamship Company entitled to damages of $46,867, with interest since June, 1903. This establishes the principle that the decision of an international arbitral court may be reviewed, and, for sufficient cause, set aside by some second international tribunal. The Hague Court for this case consisted of Dr. Lammasch, of Austria, president; M. Auguste Beernaert, of Belgium, and Señor Gonzalo de Quesada, of Cuba.

The Court of Arbitral Justice.—The most significant event of the past year in the development of international arbitration has been the virtual establishment, under the leadership of the United States, of the new Court of Arbitral Justice. The existing Hague Court, called "The Permanent Court of Arbitration," has marked defects, notwithstanding its great services. It is neither permanent nor is it a court. It is merely a list of judges, nominated by the powers signatory to The Hague convention, from which arbitrators may be chosen. The court must be created for each suit, and the costs must be borne by the two arbitrating powers, a sum so large that it may well deter small states from submitting their international disputes to this form of arbitration. The judges, too, it is felt, act rather in a diplomatic than a strictly judicial capacity: "an international arbitration," in Senator Root's words, "is often regarded as an occasion for diplomatic adjustment."

To obtain a real, permanent international court was one of the aims of the American delegates to The Hague Conference of 1907. The proposal which they made for the creation of such a body met with general approval, and received the formal indorsement of the conference. A series of thirty-five articles was adopted providing for the organization and procedure of the court. The first section read: "With a view to furthering the cause of arbitration, the Signatory Powers agree to organize, without injury to the Permanent Court of Arbitration, a Court of Arbitral Justice, freely and easily accessible, and bringing together judges representing the various juridical systems of the world, and capable of insuring the continuity of arbitral jurisprudence."

The new court will be permanent, for it will have regular annual sessions, and in addition to these will have a committee of three of its members reside permanently at The Hague, to try minor suits and cases demanding summary procedure. As the judges, according to the plan, are to be elected for a term of years, and are to pass upon a succession of cases, they will be able to maintain a uniformity in the legal principles underlying their decisions, and by their precedents will develop a system of international jurisprudence. It is provided that all judges must be trained jurists, not merely men of high official position: this will conduce to a judicial rather than a diplomatic settlement of a suit. The cost of maintaining the court will be borne by all of the states instead of by the two litigants. The Court of Arbitral Justice, in short, will be a real court, with definite rules of procedure, actually in existence, before which the states may lay their disputes; it will not be a body which they must call into being before an arbitration can begin.

The new court, though indorsed and recommended by The Hague Conference, was not actually established, for the forty-four states represented were unable to agree upon any method for the appointment of the judges. The eight great Powers suggested that they should have the right of appointing eight of the fifteen judges, who should always sit with the court whenever it should be in session, and that the other seven should represent the remaining thirty-four smaller states by some system of rotation. This was the plan accepted by all of the Powers for the International Prize Court, established by The Hague Conference in 1907, as an International Court of Appeals for cases relating to the capture of neutral ships or cargoes on account of alleged violation of the rules of war. The smaller states, while willing to concede a larger representation to the great maritime Powers in this prize court, which particularly concerns captures at sea, were unwilling to accept the same method for the Court of Arbitral Justice, before which they might be called upon to plead all kinds of cases. They demanded that each state, no matter how small, should have an equal representation on the board of judges.

Although the new court, therefore, failed of complete adoption by The Hague Conference, all that was needed to put it into operation was some general agreement in regard to the appointment of the judges. This the United States Government attempted to secure. Oct. 18, 1909, Sec. Knox sent a circular note to a number of the Powers, suggesting that, so far as regarded the consenting states, the judges of the International Prize Court should also be invested with the duties and functions of the Court of Arbitral Justice. This would result in establishing the new court, already defined and regulated by The Hague Conference, as a division or "chamber" of the existing International Prize Court. The hope was doubtless entertained that the larger states would be willing to organize the court between themselves, and that somewhat later the smaller states would give their adherence, notwithstanding the fact that they were not equally represented on the board of judges. These hopes have been largely realized. May 19, 1910, the Hon. James Brown Scott, Solicitor for the Department of State, made the following announcement before the Lake Mohonk conference on international arbitration: "The Secretary of State, the Hon. Philander C. Knox, authorizes and directs me to say officially that the responses to the identic circular note have been so favorable and manifest such a willingness and desire on the part of the leading nations to constitute a court of arbitral justice, that he believes a truly permanent court of arbitral justice will be established in the immediate future, and that the Third Peace Conference will find it in successful operation at The Hague."

Treaties of Arbitration.—To secure a general international treaty of arbitration was another of the aims of the American delegation to the last Hague Conference of 1907. They proposed that all nations should pledge themselves to refer to The Hague Court all differences of a legal nature or such as related to the interpretation of international treaties, provided they could not be settled by diplomatic means, and "did not affect the vital interests, the independence, or the honor of either of the parties or the interests of third nations." This proposal was favored by a large majority of the states at the conference, but was defeated by the influence of Germany, for the rule of the conference provided that any measure, to be adopted, must receive the support of substantially all of the nations represented. As it was, thirty-five Powers, with 1,285,000,000 inhabitants, voted for the proposal; four, with 55,500,000, refrained from voting, while five only—Germany, Austria-Hungary, Turkey, Greece, and Roumania—with a population of 167,000,000, voted against it. While a few states thus succeeded in defeating the adoption of any definite method for carrying out general international arbitration, yet the whole conference formally and unanimously declared that they "accepted the principle of obligatory arbitration."

Progress of the Movement.—The task which The Hague left uncompleted in 1907 has been accomplished, in part, by the individual nations, which have made arbitration treaties between themselves. Since the meeting of the first Hague Conference, according to the International Peace Bureau at Berne, 133 treaties of arbitration have been made. The great majority of these employ substantially the same wording that was used in the American proposal laid before the last Hague Conference—that differences of a legal nature, or relating to the interpretation of treaties, shall be submitted to arbitration, provided these "do not affect the vital interests, the independence, or the honor of the two contracting states, and do not concern the interests of third parties." Practically all of the arbitration treaties made by either the United States or England have been of this character. The United States now has arbitration agreements of this kind with twenty-four Powers, including Great Britain, Japan, Germany, France, Austria, and Italy. There are three treaties, negotiated by Denmark with Italy, Holland, and Portugal respectively, which are notable from the fact that they provide that all differences of every kind which arise between them must be settled by arbitration. The past year a few new general treaties have been formed, and several which were expiring, because made for a short term of years, have been renewed. This is true of the treaty between Germany and Great Britain.

Central America.—An international treaty of arbitration, binding upon the five states of Central America, has now been in force for over three years; it provides that "every difference or difficulty that may arise among them, of whatsoever nature it may be," must be referred for decision to the Central American Court of Justice. One suit brought by Honduras against Guatemala and Salvador has already been settled.

In addition to these general treaties, the different Powers have made a large number of special agreements, providing for the arbitration of particular disputes. During the past year controversies between the United States and Chile have been referred to George V of Great Britain; between Greece and Roumania, to the Russian and Italian ministers at Bukarest; between the United States and Great Britain, over pecuniary claims, to a mixed commission; between Costa Rica and Panama, to Chief Justice Fuller, of the United States; and between Peru and Ecuador, to the King of Spain or to the United States, Brazil, and Argentina. Arbitration, in fact, is now so common that it has come to be generally regarded as the most natural method of settling international differences.

The Peace Movement.—The movement to substitute international arbitration for war is now backed by strong, world-wide organization. There is scarcely a nation which does not have its Peace or Arbitration Societies. Germany, generally considered strongly militaristic, has a National Peace Society with 100 branches. In the British Isles there are sixty-eight different organizations devoted exclusively to the object of obtaining international arbitration, but there are nearly 150 other British societies which identify themselves with the peace movement by sending delegates to the British National Peace Congress, which now meets annually to give force and direction to the work of the local bodies. Besides Great Britain, the United States, as well as France, Germany, and other continental nations, also hold national peace congresses. The last one in this country met in Chicago, in May, 1909, with 560 delegates from thirty-two states.

International Peace Congress.—But organization is not confined within national limits. An International Peace Congress meets annually to plan and direct the work for the nations as a whole. The eighteenth Congress of this kind met at Stockholm, Aug. 1–5, 1910, where over 600 members represented a large proportion of the states of the world. The delegates discussed particularly the securing of a general treaty of obligatory arbitration, binding upon all Powers and including all kinds of international disputes; the arrest of the present rivalry in land and naval armament, and the education of school children the world over in the ideals of international good will. While the Congress is not in session its executive work is carried on by the permanent International Peace Bureau at Berne, Switzerland. This body keeps in touch with the different local societies, furnishes them information, arranges programs and platforms, aids them with suggestions and help in perfecting their organization, and facilitates their relations with each other.

Inter-Parliamentary Union. — In this work of organizing the world for peace the most important single agency is the Inter-Parliamentary Union, composed of present or past members of national legislatures, who wish to replace war by arbitration. The union held its sixteenth conference this past summer at Brussels, where the parliaments of nineteen nations were represented by 768 members. From the United States there were present three senators and fourteen representatives. The expenses of the organization are met by contributions voted by the different Powers: the United States Congress appropriated this year, for the first time, the sum of $2,500. The union, which now has an enrollment of 3,000 national legislators, of whom 250 are from the United States, is able to exert a strong influence upon the various parliamentary bodies in favor of measures which look toward a more general adoption of international arbitration.

Pan-American Conference.—A somewhat similar organization, limited to this continent, is the Pan-American Conference, whose fourth meeting was held this summer at Buenos Aires, beginning July 9th. The conference, which is composed of delegates formally appointed by the different American governments, aims not merely to further the cause of arbitration, but to bring about a greater harmony in sentiment and legislative action among all American states in regard to matters of common interest. The permanent center of this Pan-American Union, formerly known as the Bureau of American Republics, is the magnificent building in Washington, the gift of Andrew Carnegie, which was dedicated April 26, 1910, in the presence of representatives of twenty-one Latin republics. Its mission, in the words of Mr. Carnegie, is that "of promoting the reign of peace and good will, and of progress, moral and material, over the republics of this vast Continent." Pres. Taft, in his address on this occasion, said: "It goes without saying that in the foreign policy of the United States its great object is the preservation of peace among the American republics."

In the United States.—To better organize the peace movement in the United States an effort is now being made to establish a National Council for Arbitration and Peace, which shall coördinate the work of the many different societies. The most important of these are: The American Peace Society (Boston), which organized The New England Arbitration and Peace Congress at Hartford, May, 1910, and which publishes an able monthly, *The Advocate of Peace;* The American Association for International Conciliation (New York), under the presidency of Nicholas Murray Butler, of Columbia University, which issues monthly bulletins for free distribution; The Lake Mohonk (New York) Conference on International Arbitration, which brings together annually some 300 of the most prominent leaders in the movement, and carries on an active propaganda especially among colleges and business organizations; The American School Peace League (Boston), whose work is limited to public schools, with the especial object of influencing the opinions and the instruction of the teachers; and the recently formed International School of Peace, for the distribution of literature, established at Boston by the generosity of Mr. Edwin Ginn, who has assured it of a permanent annual income of $50,000.

In addition to the events already mentioned, the past year has been notable for the strong indorsement given to the general arbitration and peace movement by ex-Pres. Roosevelt, Pres. Taft, and by the United States Congress. Col. Roosevelt delivered an address, May 5th, at Christiania, Norway, as recipient of the Nobel peace prize. The plea which he made for a limitation of armaments and for a league of peace attracted wide attention in both Europe and America. He said, in part:

> Something should be done as soon as possible to check the growth of armaments, especially naval armaments, by international agreement. . . . Granted sincerity of purpose, the great Powers of the world should find no insurmountable difficulty in reaching an agreement which would put an end to the present costly and growing extravagance of expenditure on naval armaments. . . . Finally, it would be a master stroke if those great Powers honestly bent on peace would form a league of peace, not only to keep the peace among themselves, but to prevent, by force if necessary, its being broken by others . . . the ruler or statesman who should bring about such a combination would have earned his place in history for all time and his title to the gratitude of all mankind.

Pres. Taft took more advanced ground than has ever been held by any other great national executive, when he said in his oft-quoted address at New York, March 22, 1910, before the "National Arbitration and Peace League": "I have noticed exceptions in our arbitration treaties, as to reference of questions of national honor to courts of arbitration. Personally, I do not see any more reason why matters of national honor should not be referred to a court of arbitration than matters of property or matters of national proprietorship."

Congress has started to put into action the arbitration and peace sentiments of Col. Roosevelt and Pres. Taft. The following joint resolution passed both Houses and received executive approval June 25th:

> That a commission of five members be appointed by the President of the United States to consider the expediency of utilizing existing international agencies for the purpose of limiting the armaments of the nations of the world by international agreement, and of constituting the combined navies of the world an international force for the preservation of universal peace, and to consider and report upon any other means to diminish the expenditures of government for military purposes and to lessen the probabilities of war.

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THE CARNEGIE PEACE FUND

On Dec. 14, 1910, Andrew Carnegie transferred to a board of trustees $10,000,000 in five-per-cent first-mortgage bonds, the revenue of which will be used to "hasten the abolition of international war," and establish a lasting world peace. The trustees organized by choosing as president United States Senator Elihu Root, the permanent representative of the United States at The Hague Peace Tribunal. Pres. Taft has consented to be an honorary president of the foundation.

The method by which the annual income of $500,000 shall be expended is left by Mr. Carnegie entirely in the hands of the trustees. The foundation is to be perpetual, and, when the establishment of universal peace is attained, the donor provides that the revenue shall be devoted to the banishment of the "next most degrading evil or evils," the suppression of which would "most advance the progress, elevation, and happiness of man."

The Trustees.—The following is the board of trustees of the Carnegie Peace Fund:

United States Senator Elihu Root, ex-Secretary of State and ex-Secretary of War; Dr. Nicholas Murray Butler, president Columbia University; Dr. Henry S. Pritchett, president of the Carnegie Foundation for the Advancement of Teaching; Joseph H. Choate, ex-ambassador to Great Britain; Albert K. Smiley, Lake Mohonk; Dr. Charles W. Eliot, president emeritus of Harvard University; James Brown Scott, solicitor of the State Department; John W. Foster, ex-Secretary of State; Andrew J. Montague, ex-Governor of Virginia; William M. Howard, Congressman, Georgia; Judge Thomas Burke, Seattle, Wash.; James L. Slayden, Congressman, San Antonio, Tex.; Andrew D. White, ex-ambassador to Germany; Robert S. Brookings, St. Louis; Samuel Mather, Cleveland; J. G. Schmidlapp, Cincinnati; Arthur William Foster, University of California; R. A. Franks, Hoboken, N. J.; Charlemagne Tower, ex-ambassador to Germany and Russia; Oscar Straus, ambassador to Turkey; Austen G. Fox, New York; John L. Cadwalader, New York; John Sharp Williams, Senator-elect from Mississippi; C. L. Taylor, chairman of the Carnegie Hero Commission; George W. Perkins, of New York; Robert S. Woodward, of Washington, and Cleveland H. Dodge, of New York, president and secretary respectively of the Carnegie Institution of Washington.

THE INTERNATIONAL NAVAL CONFERENCE

GEORGE GRAFTON WILSON

The International Naval Conference was called by Great Britain "with the object of arriving at an agreement as to what are the generally recognized principles of international law," within the meaning of Paragraph 2 of Article 7 of the draft convention for the establishment of an International Prize Court. This paragraph was as follows: "In the absence of such (treaty) provisions, the court shall apply the rules of international law. If no generally recognized rule exists, the court shall give judgment in accordance with the general principles of justice and equity."

The note inviting Germany, the United States, Austria-Hungary, Spain, France, Italy, Japan, and Russia was issued Feb. 27, 1908. Later the Netherlands Government was invited to participate, making with Great Britain ten naval powers. The program of the conference was proposed a month later. The questions upon which His Majesty's Government consider it to be of the greatest importance that an understanding should be reached are those as to which divergent rules and principles have been enforced in the prize courts of different nations. It is therefore suggested that the following questions should constitute the program of the conference:

(*a*) Contraband, including the circumstances under which particular articles can be considered as contraband; the penalties for their carriage; the immunity of a ship from search when under convoy; and the rules with regard to compensation where vessels have been seized, but have been found in fact only to be carrying innocent cargo;

(*b*) Blockade, including the questions as to the locality where seizure can be effected, and the notice that is necessary before a ship can be seized;

(*c*) The doctrine of continuous voyage in respect both of contraband and of blockade;

(*d*) The legality of the destruction of neutral vessels prior to their condemnation by a prize court;

(*e*) The rules as to neutral ships or persons rendering "unneutral service" ("assistance hostile");

(*f*) The legality of the conversion of a merchant vessel into a war ship on the high seas;

(*g*) The rules as to the transfer of merchant vessels from a belligerent to a neutral flag during or in contemplation of hostilities;

(*h*) The question whether the nationality or the domicile of the owner should be adopted as the dominant factor in deciding whether property is enemy property.

The conference reached agreement upon all these questions except (*f*) and (*h*).

The conference sat in London from Dec. 4, 1908, to Feb. 26, 1909. Long standing differences in regard to contraband were settled by agreement upon a list of seventeen groups of articles which should never be classed as contraband, including such articles as raw cotton, wool, silk, flax, rubber, metallic ores, agricultural, mining machinery, etc. Lists of absolute contraband (articles solely or mainly of use for war), and conditional contraband (articles of use for war or for peace), were also formulated.

The rules in regard to blockade were made more definite.

Certain acts to which there had been an attempt to extend, by analogy, the penalties for violation of blockade, or carriage of contraband, were definitely placed under the category of unneutral service, and proper penalties were affixed.

A compromise was reached on the matter of destruction of a neutral prize making it lawful only in rare cases and only under grave liability to penalty.

Specific regulations in regard to the transfer of enemy merchant vessels to a neutral flag in time of war or in anticipation of war were adopted. These regulations among other particulars prescribed that if the transfer was made more than thirty days before the outbreak of hostilities it was valid if unconditional, complete, in conformity with law, and if such as to really take the vessel from the control of the former owners. The former restriction making transfers invalid if in a blockaded port or *in transitu*, if the right of repurchase or reversion, or if the legal requirements had not been met, was retained.

The right of convoy which Great Britain had not hitherto recognized was acknowledged by all the states represented at the conference.

Resistance to search, according to the Declaration of London, might involve the condemnation of the vessel and of the goods belonging to the master or owner of the vessel, and the treatment of the remaining cargo in the same manner as would be allowable if it were upon an enemy vessel.

If the capture of a vessel is not upheld by the court, and if there was not good reason for the capture, the owner according to Article 64 would be entitled to compensation.

The conference was divided upon the question of the right of what is known as the doctrine of continuous voyage. Certain states maintained the doctrine as applicable to a vessel bound ultimately to a blockaded port while ostensibly sailing to a neutral port, and to contraband whether absolute or conditional if ultimately destined for hostile use, even though the immediate destination seemed to be neutral. Other states maintained that there was no such thing as a doctrine of continuous voyage. As a proper military measure which would not work undue hardship to neutrals, it was finally decided to adopt the rule which appears as Article 30 in the Declaration of London. "Absolute contraband is liable to capture if it is shown to be destined to territory belonging to or occupied by the enemy, or to the armed forces of the enemy. It is immaterial whether the carriage of the goods is direct or entails transshipment or a subsequent transport by land." The single exception was made in Article 36, that conditional contraband even though consigned to a neutral port might be taken if shown to be destined for the hostile use of a state which had no seaboard. Of course, such a case would, under the present distribution of states, be exceedingly rare.

The Declaration of London provides for the accession of other Powers and requests the British Government to invite other Powers to accede to the Declaration.

In the general report of the International Naval Conference it was said, "It is, moreover, to be hoped that these rules will before long be accepted by the majority of states, who will recognize the advantage of substituting exact provisions for more or less indefinite usages which tend to give rise to controversy." The report also shows that the practice and theories of the different naval Powers were taken under consideration by the conference, and to the end that the conclusions of the conference might not be those of "impractical sailors," diplomatists, and jurists cordially coöperated. That both belligerent and neutral rights were recognized is evident from some of the opinions of the declaration which have appeared since its publication. Some think that it has leaned too far in recognizing that belligerents have rights, while others think that the rights of neutrals have been emphasized to such a degree as to cripple naval commanders in time of war. The fact seems to be that, owing to the personnel of the conference which included a large number of naval officers of long experience, as well as diplomats and jurists who emphasized the rights of neutrals, practical working regulations were drawn up and submitted to the Powers. Agreement upon common rules was reached by states whose previous practice and tendencies had often been widely divergent. That this declaration should be in every particular acceptable to all the interests of any state could not be hoped. For the first time the rules for the conduct of maritime warfare have been formulated by a conference of nations. This had by many been thought to be an impossible task. The conference was not called to provide a way for the abolition of war, but for the agreement upon rules "fitted to regulate in practice the intercourse of nations on certain important questions in regard to which precise rules have hitherto been wanting." The aim was to promote peace by the establishment of rules of equity and justice which should prevail if war should, unfortunately, arise. The existence of exact and well defined law is clearly one of the first steps in promoting good relations among states.

The agreement of the representatives of ten nations upon some, if not all, phases of the subjects of blockade, contraband, unneutral service, destruction of neutral prizes, transfer of flag, enemy character, convoy, resistance to visit and search, and indemnity for seizure was the work of the International Naval Conference of 1908–1909 as shown in the Declaration of London of Feb. 26, 1909. Of this work the general report says, "The conference has thus taken up the work of codification begun by the Declaration of Paris of 1856. It has worked in the same spirit as the second peace conference, and, taking advantage of the labors accomplished at The Hague, it has been able to solve some of the problems which, owing to the lack of time, that conference was compelled to leave unsolved. Let us hope that it may be possible to say that those who have drawn up the Declaration of London of 1909 are not altogether unworthy of their predecessors of 1856 and 1907."

V. LAW AND JURISPRUDENCE *

Francis M. Burdick

CONSTITUTIONAL LAW: FEDERAL AND STATE

The development of American jurisprudence is conditioned largely by the Federal and State constitutions. Formal amendments to the Federal Constitution have proved difficult of accomplishment. Since 1804, only three amendments have been ratified, though more than two thousand are said to have been proposed.

Amendments to Federal Constitution.—Following the recommendation of Pres. Taft in his special message June 16, 1909, the Sixty-first Congress proposed the following amendment to the Federal Constitution:

> INCOME TAX. Article XVI. The Congress shall have power to lay and collect taxes on incomes, from whatever source derived, without apportionment among the several states and without regard to any census or enumeration.

It was deposited in the Department of State, July 31, 1909, and is to become "valid to all intents and purposes as a part of the Constitution, when ratified by the legislatures of three fourths of the several states." When originally introduced, it read: "The Congress shall have power to lay and collect direct taxes on incomes without apportionment among the several states according to population." In neither form was it subjected to debate in either House of Congress, nor did it meet with serious opposition, although one of its advocates said, "It is very defectively drawn." It passed the Senate unanimously, and the House by a vote of 317 to 14. During 1909 it received but slight consideration from the states. The Legislature of Alabama ratified it Aug. 10th. During 1910 it has been ratified by the following states: Georgia, Illinois, Kentucky, Maryland, Mississippi, Oklahoma, and South Carolina.

Gov. Hughes in a special message to the New York Legislature on Jan. 5th opposed its ratification chiefly on the ground that the amendment would "subject to Federal taxation the incomes derived from bonds issued by the State itself, or those issued by municipal governments organized under the State's authority." He declared that "to place the borrowing capacity of the State and of its governmental agencies at the mercy of the Federal taxing power, would be an impairment of the essential rights of the states, which, as its officers, we are bound to defend." Senator Root sent a letter to the Legislature in support of the amendment. April 11th a memorandum was submitted in opposition to it by Joseph H. Choate, William D. Guthrie, Victor Morawetz, Austen G. Fox, John G. Milburn, and Francis Lynde Stetson, while Prof. E. R. A. Seligman supported it in an article published in the *Political Science Quarterly*, June, 1910.

Although this amendment has been rejected by some of the legislatures which have voted upon it, such rejection does not preclude a subsequent legislature of any of those states from ratifying it. Whether, on the other hand, a state which has ratified the amendment can withdraw such ratification, is a question yet to be settled by the courts. Ohio and New Jersey declared their consent to the fourteenth amendment withdrawn, and New York took similar action as to the fifteenth amendment. But the legality of such action was rendered immaterial by the adoption of each amendment by the constitutional three fourths of the states, without counting those in question. (See XII, *The Income Tax Amendment.*)

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* The sections on Legislative Tendencies and Reform in Legal Procedure are contributed by John Bell Sanborn, University of Wisconsin Law School.

Direct Election of United States Senators.—The Legislature of Mississippi passed a resolution requesting the Congress of the United States to submit to the legislatures of the several states for ratification or rejection an amendment to the Federal Constitution, providing for the election of United States Senators by direct vote of the people. (Chapter 362; Laws, 1910.)

Similar requests have been made by more than thirty states. Some of them, it is thought, are so defective either in form or substance that they cannot be used as applications to Congress to call a convention for proposing amendments under Article V of the Federal Constitution. (See VI, *Popular Government.*)

Amendments to State Constitutions.—Amending State constitutions has been an easy task, and the desire for change in these fundamental charters remains unabated, as shown by the following proposals in the different states.

California. To be submitted in Nov., 1910. Giving the State and the city of San Francisco power to tax themselves for $5,000,000 each for the Pan-American Pacific Exposition of 1915. This was adopted.

Louisiana. To be submitted in Nov., 1910:

Authorizing the parish of Orleans to raise money by tax for expenses of the "World's Panama Exposition."

Amending Art. 107 relative to the division of the state into judicial districts.

Exempting from taxation the capital stock of certain companies in certain cases.

To levy a special tax for creating a road fund.

Empowering Board of Commissioners of the Port of New Orleans to erect and operate public warehouses.

Amending the provision as to the care of delinquent children.

Creating the office of assistant attorney of Louisiana.

Authorizing a tax by parishes, cities or towns for the support of public schools.

Art. 18, increasing the number of Representatives in the General Assembly.

Art. 303, imposing tax for the use of Confederate veterans.

Art. 46 and 281, as to bonds and bonded indebtedness.

All of these amendments were adopted.

Maryland. To be submitted at the election in 1910:

To amend Art. 1 of the Constitution, Sec. 8, providing that all state and municipal elections shall be conducted by the Australian ballot system.

To be submitted at the election in 1911: To amend Sec. 2 of Art. 3, title, "Legislative Department," dividing Baltimore into four legislative districts, and adding two senators to be elected at large by the qualified voters of the city.

To amend Sec. 4 of Art. 3, by making a new apportionment of representation in the House of Delegates, under the census of 1910.

Mississippi. The legislature proposed the following amendments to the State Constitution to be submitted to the qualified electors for ratification or rejection at the Nov. election:

Sec. 153 to be so amended as to make the judges of the circuit and chancery courts elective, instead of appointive, as heretofore.

Sec. 36, to be so amended as to require biennial sessions of the Legislature, instead of quadrennial as heretofore.

Section 273, to be so amended as to secure the insertion in the Constitution at the next succeeding session of the legislature of all amendments adopted at an election.

Missouri. The proposed prohibition amendment was defeated in November.

New York. To be submitted to the people at the general election of 1910:

Art. 6, Sec. 7, providing for the election of two additional associate judges of the court of appeals; that not more than seven of the court shall sit on the hearing of any appeal, except upon a reargument, and that the salary of associate judges shall be $15,000, and that of the chief judge $15,500, defeated by 292 in a poll of 1,094,199 votes.

To be referred to the Legislature of 1911:

Art. 1, Sec. 6: By adding the following: "When private property shall be taken for public use by a municipal corporation, additional adjoining or neighboring property may be taken under conditions to be prescribed by the legislature by general law. Property thus taken shall be deemed to be taken for public use."

Art. 1, Sec. 7: Compensation for private property taken for public use may be ascertained "by the Supreme Court with or without a jury."

Art. 3, Sec. 6: Increasing the salary of Senators to $3,500, and of Assemblymen to $3,000, and fixing the mileage for members of the legislature at "three cents for each mile they shall travel in going to and returning from their place of meeting once in each week of actual attendance of the session, on the most usual route."

Art. 4, Sec. 4: Increasing the salary of the Governor from $10,000 to $20,000.

Art. 6, Sec. 2: Striking out the last sentence, which now gives to justices of the appellate division in each department, power to fix special terms and assign justices thereto.

Art. 6, Sec. 14: Increasing the number of county judges in Kings from two to four.

Art. 7, Sec. 7: Authorizing state reservoirs in the forest preserve, in accordance with legislation as therein prescribed.

Art. 7, Sec. 8: Prohibiting the sale or lease of certain canals and lands connected with them, and regulating their abandonment.

Oklahoma. To be submitted to the voters at the next general election, and, if adopted, to be known as Sec. 12A of Art. 10 of the Constitution:

Directing the legislature to provide for the payment into the public school funds of certain taxes levied upon the property of public service corporations.

Suggesting to the citizens of the State that they initiate by petition a proposed amendment to the constitution to be known as Sec. 4A of Art. 3, providing an educational test, popularly known as the "Grandfather Clause," as follows: "No person shall be registered as an elector of this State, or be allowed to vote in any election herein, unless he be able to read and write any section of the constitution of the State of Oklahoma; but no person who was, on Jan. 1, 1866, or at any time prior thereto, entitled to vote under any form of government, or who at that time resided in some foreign nation, and no lineal descendant of such person shall be denied the right to register and vote because of his inability to so read and write sections of such constitution." This amendment was adopted Aug. 2d, and declared valid by the Supreme Court of Oklahoma, Oct. 26th.

The proposed constitutional amendment for woman suffrage was defeated at the Nov. election.

Oregon. Amendments to secure statewide prohibition and woman suffrage were defeated in Nov. election. (See *Initiative and Referendum, infra.*)

South Carolina. Adopted at the election in Nov.:

Art. 8, Sec. 7, exempting from the section certain bonded indebtedness of the town of Darlington.

Art. 8, Sec. 7, exempting from the section and from Art. 10, Sec. 5, the bonded indebtedness of any municipal corporation, when the proceeds of said bonds are applied solely and exclusively for waterworks, sewage or lighting plants.

Art. 8, Sec. 7, exempting from the section certain bonded indebtedness of the city of Aiken.

Art. 8, Sec. 7, exempting from the section certain bonded indebtedness of the town of St. Matthews.

Art. 5, Sec. 12, amended so as to require the concurrence of three of the justices of the Supreme Court for a reversal of the judgment below.

Art. 10, by adding Sec. 14, empowering the General Assembly to authorize certain municipalities to levy certain assessments for permanent improvements in certain cases.

Art. 10, Sec. 6, adding a clause exempting certain municipalities from the limitations of the section.

Virginia. To be submitted to the voters at the election of 1910:

Art. 4, Sec. 46, extending the sessions of the General Assembly from sixty to ninety days. This was rejected.

Art. 7, Sec. 110, striking out provisions relating to the eligibility of certain county officers to reëlection. Adopted.

Art. 4, Sec. 50, modifying the procedure to be followed in the enactment of laws. Rejected.

Art. 8, Secs. 119 and 120, modifying provisions as to eligibility of certain city officers to reëlection. Rejected.

To be submitted to the next general assembly for its concurrence:

Art. 8, Sec. 117, increasing the power of the General Assembly in the matter of chartering and classifying cities.

Washington. An amendment to secure woman suffrage was adopted at the Nov. election.

LEGISLATIVE TENDENCIES

In 1910 were held regular annual sessions of the legislatures in Georgia, Massachusetts, New Jersey, New York, Rhode Island, and South Carolina; regular biennial sessions in Kentucky, Louisiana, Maryland, Mississippi, Ohio, and Virginia; and special sessions in Illinois, New York, Rhode Island, and Oklahoma. The second session of the Sixty-first Congress was also in session during the year, while the third session of this Congress began its session in Dec. The even numbered years are the ones in which usually occur the long sessions of Congress and the fewest meetings of the State legislatures. Regularly there are sessions of the legislatures of twelve states during the even numbered years, and of thirty-nine states during the odd numbered years, not counting Alabama, where the sessions are quadrennial, or the new states of Arizona and New Mexico.

The following table shows the sessions held during the year, their duration and the laws enacted by them.

LEGISLATURES IN SESSION — 1910.

STATE.	Begun.	Ended.	No. of Laws.
Georgia	June 22, 1910	....	....
Illinois (extra)	Dec. 14, 1909	March 2, 1910	17
Kentucky	Jan. 4, 1910	March 15, 1910	125
Louisiana	May 9, 1910	July 7, 1910	317
Maryland	Jan. 5, 1910	Apr. 4, 1910	762
Massachusetts	Jan. 5, 1910	June 15, 1910	819
Mississippi	Jan. 4, 1910	Apr. 16, 1910	384
New Jersey	Jan. 11, 1910	May 12, 1910	303
New York	Jan. 5, 1910	May 27, 1910	705
New York (extra)	June 20, 1910	July 1, 1910	2
Ohio	Jan. 3, 1910	May 10, 1910	274
Oklahoma (extra)	Jan. 20, 1910	March 31, 1910	119
Rhode Island*	Jan. 11, 1910	April 29, 1910	144
South Carolina	Jan. 11, 1910	Feb. 19, 1910	333
Virginia	Jan. 12, 1910	March 17, 1910	367

* An extra session was held, Aug. 16–19, at which 13 laws were enacted.

The regular legislative sessions of 1910 varied in length from two to five months, that of Virginia being the shortest, and Massachusetts the longest. The special session in Oklahoma continued for over two months, and the special session in Illinois lasted for two months and a half, but most of this time was taken up by long recesses. In both of these states there was no regular session. In New York a special session was called almost immediately after the adjournment of the regular session. On the whole, the legislatures met for considerably longer periods than they did several years ago, this increase in length being due to the greater number of subjects now being considered by the legislatures. In Virginia the Legislature adopted for the second time a resolution for a constitutional amendment extending the length of sessions from sixty to ninety days, and this amendment will now be submitted to the vote of the electors.

The session laws of the various states are, on the whole, very bulky, particularly when compared to the similar volumes of a number of years ago. In New York, where there are annual sessions, the laws of the regular and special sessions for 1910 cover 2,047 pages, comprised in 707 chapters, and this publication does not include three chapters, enacted as a part of a plan for a general revision of the statutes of the State. A comparison between the size of the session laws in Maryland for ten-year periods, is as follows: in 1880, the laws covered 760 pages; in 1890, 844 pages; in 1900, 1,198 pages; in 1910, 1,451 pages.

Special Legislation.—It is difficult to make comparison between the amount of legislation in the various states. This is because of different provisions regarding special and general laws. In many of the states special legislation has been to a considerable extent done away with through constitutional amendments prohibiting special acts of incorporation of private corporations or cities. In other states a legislature may still grant charters by special act and may also legislate on a large number of subjects frequently covered by general enactments.

An extreme case of this special legislation is found in South Carolina, where not only the statutes but the Constitution are concerned with matters of purely local importance. In an amendment proposed during 1910 to the constitution, three cities and one town were permitted to assess abutting property for street improvements.

The great length of legislative sessions and the bulkiness of their laws is, however, not due to any special provisions of the State constitutions, but to the spirit of the present age which looks to the legislature for the regulation of large fields formerly left entirely free from any restraint, or which were regulated entirely through the action of the courts acting in individual cases when redressing private wrongs. This demand upon the legislatures is not confined to this country, but its manifestations are seen in England and throughout the Continent. We are in what Prof. Dicey has well termed the collectivist period, as distinguished from the preceding individualistic period, where the influance of the *laissez-faire* school was predominant.

This tendency is shown by the modern legislation in the supervision and regulation in some degree at least of most of the phases of human activity. In this infinite variety the statute book of to-day is a great contrast to that of twenty or thirty years ago. The old laws concerned themselves largely with the necessary regulation of the various departments of government, and with the courts and their procedure, together with more or less modification or affirmance of the principles of the common law. Many of the subjects upon which we have recently had the greatest amount of legislation could hardly be found in an index to a volume of session laws issued twenty years ago.

Examples of Modern Legislation.—Because of the comparatively few sessions held during 1910 the laws of the year do not exhibit this tendency as fully as did those of 1909 and 1907. A few examples of the general tendency of regulation may be noted. The subject of public health is of special concern to the modern legislature. To secure this it was deemed necessary in 1910 to regulate in different states the conduct of various businesses, such as bakeries and plumbing, and to provide for clean linen, sanitary closets, window screens, etc., in hotels. Under the individualistic idea of government the securing of these things to the public would have been left to the individual, who in theory would give his custom to the clean bakery and hotel, so that competition would compel the poorer to come to the higher standards or fall out of the race. Under the new theory the individual may not have the knowledge to bestow his custom intelligently, or he may not have a chance where all, with whom he trades in a certain line, are below a proper standard. But the legislation of 1910 goes even further. The individual is protected as against himself. In Massachusetts there may not be a public drinking cup for his use, although he is under no possible compulsion to use such a cup if it is provided.

The regulation of business, and particularly the business carried on by public service companies, is coming to be a generally recognized function of the Legislature. The same tendency appears in 1910 as shown in other years by the creation of commissions for the regulation of such companies or the extension of the jurisdiction of commissions already in existence. The regulation of private corporations is so far confined largely to the laws aimed at trusts or monopolies, one of the most extreme phases of which is seen in an act in Mississippi for 1910, which prohibits any corporation from purchasing a competing business. It is evidently framed without regard to the effect of such purchase upon competition, and the act prohibited is illegal even though no monopoly is thereby created.

In Ohio, an act was passed specially authorizing the attorney general to obtain an injunction against violators of anti-trust laws.

In New Jersey the State Board of Health secured statutory power to enjoin the pollution of streams.

Kentucky legalized agreements between growers of farm products to abstain from growing any kind of crops for any given period or season. (Chapter 117.)

Criminal Law. — Another present legislative tendency which is exhibited during the year is the extension of the criminal law. This is shown in two ways. Common law crimes are subdivided into sometimes rather minute fields, so that we have under new names things which were punishable before under a more general head. The other is the making criminal many things which, while civilly fraudulent at the common law were not criminally so. Various frauds in business which would have rendered the perpetrator liable to an action for deceit are now classed as crimes, so that they can be reached through the action of the state. An illustration of both of these tendencies is seen in the laws of Maryland for 1910, where at least seven new crimes are specified. Some of these, such as embezzlement by insurance agents, were probably comprised under already existing heads; others, such as imitation of trade names, formerly probably only rendered a person liable in a civil suit.

Early Adjournment.—The increase in the length of sessions of the legislature is thus seen to be coincident with and probably occasioned by an increase in both the subjects covered by them and the minuteness with which these subjects are legislated upon. It may be questioned, however, whether this increase in time is proportionate to the growth in the work which the legislators have to do. The ordinary legislative session is held during the winter months. With the approach of the warmer weather the farmers become anxious to return for their spring planting, the business man feels that his business has been long neglected and needs his personal attention, the lawyer feels the pressure of cases which he has postponed over the term, and there is a general unrest among all the members and a feeling that an early adjournment is desirable. Such an early adjournment could very likely have been had without affecting the quality of the laws by a legislature dealing with the limited range of subjects which formerly received attention. In the modern legislature, with the numerous bills concerning questions about which most of the members knew little when they took their seats, and the demand for action upon such a varied range of subjects, a greater tax has been placed upon the time of the legislator. If such minute regulation as we now have is desirable. and it seems to be inevitable, this regulation must be with care and knowledge, or it will prove of more harm than good. With work properly done the early adjournment is an impossibility, and the legislator is forced to remain at the capital while his own business suffers.

Popular Control of Legislation.—In the enactment of this large amount of legislation the law makers are undoubtedly acting in response to a very decided public sentiment. Much has been heard recently of the failure of our legislatures to carry out the will of the people, and various expedients, such as the initiative and referendum, are advocated for the purpose of bringing the legislators more directly under the control of their constituents. It is apparent, however, that, while legislatures may not always enact laws in exact accordance with popular desire, yet they are not irresponsive to public opinion, as appears from the extent and variety of the laws they pass.

In some directions we find indications of a modification of our legislative system. The most important is the initiative and referendum, now in operation in eight states. This was not extended during the year 1910. One phase of its operation, however, is seen in the special session of Oklahoma, where in seventy-four out of 119 acts the legislature declared the existence of an emergency, so that the referendum could not be operative. (See VI, *Popular Government.*)

In Rhode Island an act of 1910 carries out the provision of the recent constitutional amendment of that State, giving the governor the veto power.

Commissions.—The increase of the demands upon the legislature and the more specialized knowledge required in modern legislation has led to the adoption of various expedients for assisting the legislatures in their work. One of these is in the creation of commissions to study particular subjects and report to the legislature. In Illinois such a commission consisting of persons not members of the legislature was created to investigate the subject of employers' liability. In New Jersey a similar commission was created for the study of old-age pensions, and in the same State a commission, a majority of whose members were from without the legislature, was created on the subject of employers' liability.

Somewhat similar to this is the work of the commissioners on uniform state laws. Their primary object is to secure united action among the various states on subjects upon which uniformity seems necessary. They necessarily afford, however, the opportunity for the special study of the subject which is the object of the ordinary legislative commission.

In many cases, however, the legislatures are apt to look upon the creation of special commissions as an abdication of their own powers, and are turning rather to special committees which are in session during the interval between the legislatures. During 1910 various committees of this kind were holding hearings preparatory to reporting at the next session of the legislatures. This was most notable in Wisconsin, where special committees on employers' liability, banking, good roads, income tax, water powers, and education were created at the session of 1909, for the purpose of holding hearings on the subjects and reporting at a contemplated special session to be held during 1910. No such session was called, however, one of the principal reasons being that the work of the committees was found to be very heavy, and they were unable to report in time to make a special session possible.

Legislative Libraries.—Many of the states are also endeavoring to assist the work of the legislatures by the creation of legislative libraries, whose object is to obtain information on subjects liable to come before the legislature. The fundamental idea of these libraries is the furnishing of information and not to work for or against any particular ideas. No extension of this work was found during 1910.

On the whole the work of the legislatures of 1910 is not notable. They have continued the regular work of law making, following along the same lines as the legislatures of the last eight or ten years. The length of the sessions shows no sign of returning to its former standard. The fact that the present age demands a governmental interference in many fields is most strikingly seen in the session laws of the various states. In Maryland the legislature thought it necessary to authorize the State Board of Education to "add the international language known as Esperanto to the branches required to be taught in the normal schools and high schools." Many acts were passed by this legislature on public health.

JUDICIAL DECISIONS

No attempt will be made to digest all of the cases decided during the year which involved questions of constitutional law, for they number upward of 700. It is believed, however, that the following outline embraces the most important and instructive decisions of the Federal and State courts passing upon the constitutionality of statutes.

General Principles.—A court will not pass upon the constitutionality of a statute unless this is necessary to the determination of an actual and concrete controversy regarding it. The State *vs.* Dolley, 82 Kan. 533 (May 7, 1910); Smith *vs.* Stephens, 91 N. E. 167 (Ind. Sup. Ct., March 8, 1910). The presumption is in favor of constitutionality: Michigan Central Ry. *vs.* Michigan Railroad Commissioner (Mich. Sup. Ct., March 19, 1910), 125 N. W. 549; State *vs.* Byers (Ark. Sup. Ct., Feb. 21, 1910), 126 S. W. 94.

If a statute is susceptible of two interpretations, preference will be given to the one which will render it constitutional. Georgia Fire Ins. Co. *vs.* City of Cedartown (Ga. Sup. Ct., Feb. 21, 1910), 67 S. E. 410; State *vs.* District Court (Sup. Ct. Mont., June 7, 1910), 109 Pac. 438.

Courts will not pass upon the constitutionality of statutes unless they are assailed in a properly instituted litigation by one who claims that his personal or property rights are invaded by it. Gordon *vs.* Corning (Ind. Sup. Ct., June 9, 1910), 92 N. E. 59; House *vs.* Mayes (Mo. Sup. Ct., April 26, 1910), 127 S. W. 305; State *vs.* Rose, 40 Mont. 66, 105 Pac. 82 (Nov. 29, 1909); Coal & Coke Ry. *vs.* Conley (W. Va. Sup. Ct., March 8, 1910), 67 S. E. 613;

Brown Forman Co. *vs.* Kentucky, 217 U. S. 563, 30 Sup. Ct. Rep. 578 (May 16, 1910); Grenada Lumber Co. *vs.* Mississippi, 217 U. S. 433 (May 2, 1910); Citizens Nat. Bank *vs.* Kentucky, 217 U. S. 443 (May 2, 1910).

Advisory Opinions.—Although the courts refuse to decide questions of constitutional law when presented in moot cases, the constitutions of a few states provide for obtaining the opinions of the judges of the highest court upon due application by the executive or legislative branches of government. Examples are afforded by opinions of the justices of the Supreme Judicial Court of Massachusetts rendered March 4 and April 5, 1910. In one case the House of Representatives, and in the other the Senate, called for the opinion of the justices as to the constitutionality of certain proposed legislation. This was given to the effect that "the Legislature cannot authorize a city to exercise the right of eminent domain in connection with the laying out of a public thoroughfare by taking land adjoining but outside the proposed thoroughfare, with a view to its subsequent use by private individuals under conveyances, leases, or agreements, although such use is intended to promote trade, and perhaps also manufacturing by the erection of suitable buildings on the land; the purpose not being a public one within the meaning of the Constitution of the Commonwealth." But the judges declared that the Legislature could authorize the taking and sale of "a remnant of an estate, of which the greater part necessarily is taken for the public purpose, which is so small or of such a shape and of so little value that the taking of it in the interest of public economy or utility, or in some public interest, may be fairly incidental to the taking of the greater portion of the land for the public work."[1]

Spirit of the Constitution.—The Supreme Court of Georgia follows the prevailing rule in this country in holding that "it has no authority to declare void a law on any alleged ground that it violates the spirit of our government and institutions or the principles upon which they are founded. Courts cannot declare a law void because it violates the spirit of the constitution; to be nugatory, it must be repugnant to the constitution itself—not to the general atmosphere pervading it, but its provisions." (Gray *vs.* McLendon, March 18, 1910, 67 S. E. 859.) This can hardly be reconciled with the reasoning of Judge Cooley in the famous case of The People *vs.* Hurlbut, 24 Mich. 44, which was approved by the Court of Appeals in Rathbone *vs.* Wirth, 150 N. Y. 459, 45 N. E. 15, 34 L. R. A. 408.

Division of Governmental Powers.—All of our constitutions recognize the division of general governmental powers into three branches—viz., executive, legislative, and judicial, and commit the exercise of these powers to distinct departments, neither of which is to encroach upon the proper field of the other. Courts have no difficulty in defining the legislative power as that which enacts the laws; the judicial power as that which expounds and applies the laws, and the executive power as that which enforces them. They do not always find it easy, however, to apply these general definitions to concrete cases. This is illustrated by *in re* Appointment of Revisor, 141 Wis. 592, 124 N. W. 670 (Feb. 4, 1910), where the Supreme Court of Wisconsin, by a vote of four to three, upheld the constitutionality of a statute which authorized the State library trustees, consisting of the justices of the Supreme Court and the attorney general, to appoint a state statutory revisor. In the opinion of the majority such revisor was to assist the court in the performance of the acts of an administrative character, necessary or proper to the discharge of judicial duties. Hence the statute did not impose upon the judges nonjudicial duties. On the other hand, the minority were of the opinion that the revisor's services pertained to the execution and administration of the legislative branch of government. Accordingly, they considered the statute unconstitutional because attempting to transfer legislative functions to the judiciary. The prevailing and dissenting opinions are worthy of careful study. They contain an able discussion of the principles involved, as well as an abundance of illustrations and a full array of authorities bearing upon this point.

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[1] These opinions, reported in the Supplement to 204 Mass. 607, may well be compared with the proposed amendment to Art. 1, Sec. 6, of the N. Y. Constitution set out *supra*.

In United States *vs.* Louisville & N. Ry., 176 Fed. 942 (March 15, 1910), act of Congress of March 3, 1905, ch. 1496, Sec. 4, was held unconstitutional in attempting to empower the executive department to declare what facts constitute a crime. A crime, said the court, "must be created by the act of Congress alone, for the public are not required to look beyond the act, and their endeavor to ascertain what is criminal, and the discretion of fixing what facts import criminality is exclusively that of the lawmakers as distinguished from the executive."

The Supreme Court of South Carolina declared that a statute, which undertook to confer on the father arbitrary power to grant the custody of his children to any person he might select, would be unconstitutional, because an attempt by the legislature to take from the judiciary the right of determining all questions involving the custody of minors and their illegal restraint. Ex parte Tillman, 84 S. C. 552; 66 S. E. 1049 (Feb. 15, 1910).

Delegation of Powers.—The constitutionality of statutes is often successfully assailed because of their attempt to delegate either executive, judicial, or legislative powers to persons outside of these departments. Examples are found in the cases of Columbia Trust Co. *vs.* Lincoln Institute, 129 S. W. 113 (Kentucky Court of Appeals, June 17, 1910), and of Booth *vs.* McGuinness, 75 At. 455 (N. J. Court of Errors and Appeals, Feb. 4, 1910). The assault failed in the following cases, the courts holding that the several statutes did not delegate governmental powers in violation of the constitution: Burrell *vs.* Gill, 108 Pac. 1080 (Washington Sup. Court, May 26, 1910), where the act created a municipal plans commission, which was an advisory board only; Billings Sugar Company *vs.* Fish, 106 Pac. 565 (Supreme Court of Mont., Jan. 7, 1910), where the act provided for a drain commissioner to carry into effect a drainage law; Michigan Central Ry. *vs.* Michigan Railroad Commission, 125 N. W. 549 (Mich. Sup. Ct., March 19, 1910), upholding a railroad commission act on the ground that the duties of the commissioners were not legislative or executive but ministerial. "The authority conferred on them relates merely to the administration in practice of the general rules laid down by the common law and by the legislature"; State *vs.* Frear, 125 N. W. 961 (Wis. Sup. Ct., April 5, 1910), holding that the primary election law of that State did not attempt to devolve legislative power upon the electorate, but provided only that the question whether the law should become operative was to be submitted to a vote of the people.

Invading Personal Rights.—While these are not susceptible of exact definition, the Supreme Court of South Carolina asserts that "they clearly embrace family rights, that is, the right of parents to the care and custody of their children, and the right of children to receive from their parents maintenance and care." It declared that if a statute attempted to give to the father the absolute right to dispose of the custody of his children by deed or will, it must be held unconstitutional. As the statute in question (Secs. 2689 and 2690, Civil Code), however, could be construed as conferring upon the father power only to relinquish his paternal right over his children, it should be thus construed and its constitutionality sustained. Accordingly, the mother's right to the custody of her children, and their right to be free from the illegal restraint upon their liberty attempted by the father in deeding them to others, were upheld. (Ex parte Tillman, 84 S. C. 552; 66 S. E. 1049.)

Religious Freedom.—This personal right is secured against legislative invasion by special constitutional clauses. In Illinois, Art. 2, Sec. 3, guarantees "the free exercise and enjoyment of religious profession and worship, without discrimination." This guarantee, it has been held, was invaded by a board of education in requiring all children attending the public schools under its control to take part in certain religious exercises, which included readings from the King James version of the Bible, repeating in concert the Lord's Prayer from such version, singing certain hymns, and bowing the heads and folding the hands in an attitude of worship. Two judges dissented; and the majority opinion concedes that in Iowa, Kansas, Kentucky, Maine, Massachusetts, Michigan, and Texas the decisions supported the minority view. These decisions, it is suggested in the decision, are based upon constitutional provisions somewhat different from that which exists in Illinois. (The People *vs.* Board of Education, 245 Ill. 334; 92 N. E. 251.)

Freedom of Contract.—That there is a certain freedom of contract which cannot be destroyed by legislative enactment is undoubted. The Supreme Court of Missouri has held a statute unconstitutional which prohibited employees in certain bakeries from working therein more than six days in one week, because it was an arbitrary interference with freedom of contract. State *vs.* Miksicek, 125 S. W. 507 (Feb. 12, 1910), following Lochner *vs.* New York, 198 U. S. 45, 25 Sup. Ct. 539; 49 L. Ed. 937. But legislative restraint of freedom of contract may be validly imposed in the reasonable exercise of the police power. Accordingly, the Federal Supreme Court unanimously affirmed the decision of the Supreme Court of Mississippi, sustaining the constitutionality of a state statute prohibiting persons from entering into contracts in restraint of trade. Grenada Lumber Co. *vs.* Mississippi, 217 U. S. 433, 30 Sup. Ct. 535 (May 2, 1910). The Supreme Court of Arkansas has held that a statute requiring corporations doing business in that State to pay their employees semimonthly, is constitutional, the restriction upon freedom of contract being justified by considerations of public policy. Arkansas Stove Company *vs.* State, 125 S. W. 1001 (Feb. 14, 1910). To the same effect, N. Y. C. & H. R. Ry. Co. *vs.* Williams, 199 N. Y. 108 (June 14, 1910).

Equal Protection of the Laws.—This means subjection to equal laws applying alike to all in the same situation. Accepting this definition, the Federal Supreme Court has declared that "a classification for taxation that divides corporations doing exactly the same business with the same kind of property into foreign and domestic is arbitrary," and that to tax the foreign corporation by a different and much more onerous rule than is used in taxing domestic corporations for the same privilege, is a denial of the equal protection of the laws. Southern Railway Company *vs.* Greene, 216 U. S. 400, 30 Sup. Ct. 287 (Feb. 21, 1910), reversing 160 Ala. 404, 49 So. 404.

The same court in Standard Oil Co. *vs.* Tennessee, 217 U. S. 413, 30 Sup. Ct. 543 (May 2, 1910), affirming 120 Tenn. 86, and in Brown-Forman Co. *vs.* Kentucky, 217 U. S. 563, 30 Sup. Ct. 578 (May 16, 1910), affirming 125 Ken. 402, held that the state statute involved did not deny equal protection of the laws.

Whether the classification in a particular statute is arbitrary, or whether it is based upon some real and substantial distinction, bearing a reasonable and just relation to the things in respect to which such classification is imposed, is a question upon which the members of a court often differ. The subject is admirably discussed and the authorities fully collated in Chicago, M. & St. P. Ry. *vs.* Westley, 175 Fed. 619 (April 12, 1910), where the Employers' Liability Law of South Dakota was held unconstitutional because of its arbitrary classification of employers to be affected by its provisions.

Whether a corporation is a person within the meaning of constitutional provisions guaranteeing the equal protection of the laws, is another question upon which the courts differ. In Southern Railway Co. *vs.* Greene, *supra*, the Federal Supreme Court reiterated its answer in the affirmative. The same view was announced by the Supreme Court of Arkansas in Arkansas Stove Co. *vs.* State, 125 S. W. 1001 (Feb. 14, 1910), and the Supreme Court of Oregon in Portland Ry. Co. *vs.* Railroad Commission, 109 Pac. 273 (June

7, 1910). A negative answer was given by the Supreme Court of Indiana, in Mutual Mtge. Co. *vs.* Alspaugh, 91 N. E. 504 (April 7, 1910), and by the Supreme Court of Mississippi, in State *vs.* Louisville & N. Ry., 51 So. 918 (April 11, 1910).

Due Process of Law.—A statute of Kansas required foreign corporations to pay a given per cent of all their capital, wherever and whenever employed, as a condition of their right to do domestic business in that State. This the Federal Supreme Court held was a violation of the due process clause of the Federal Constitution, in undertaking to make the payment of a tax upon property beyond the borders of the State a condition of doing domestic business within the State. The statute was therefore unconstitutional and void. Western Union Tel. Co. *vs.* Kansas, and Pullman Co. *vs.* Same, 216 U. S. 1 and 56, 30 Sup. Ct. 190 and 232 (Jan. 1910). But the Supreme Court is careful to point out in a later case that the Fourteenth Amendment was not intended to cripple the taxing power of the State, or compel it to adopt an iron rule of equal taxation. Accordingly it upheld the constitutionality of a Texas statute which imposed an occupation tax on all wholesale dealers in certain articles. Southwestern Oil Co. *vs.* Texas, 217 U. S. 114, 30 Sup. Ct. 496 (April 4, 1910), affirming 100 Tex. 647.

Deprived of Property.—A person is not deprived of property by the legislative abolition of an office held by him, for such office is a public trust or agency, and the incumbent has no property right, or vested interest, or contract right in it. Sanchez *vs.* U. S., 216 U. S. 167, 30 Sup. Ct. 361 (Jan. 11, 1910); Gray *vs.* McLendon, 67 S. E. 859 (Ga. Sup. Ct., March 18, 1910); State *vs.* Henderson, 124 N. W. 767 (Ia. Sup. Ct., Feb. 9, 1910). In the last cited case it was also held that the power of a majority of voters to elect an officer is subject to the legislative power to specify constitutional grounds for removal. Hence a mayor was adjudged removable from office for drunkenness, though the people knew of his habits when they elected him, and such facts formed an issue in the campaign. Nor has a person any vested right to traffic in liquor. Gillerby *vs.* Board of Commissioners, 107 Pac. 71 (Idaho Sup. Ct., Jan. 25, 1910); Gordon *vs.* Corning, 92 N. E. 59 (Ind. Sup. Ct., June 9, 1910), citing decisions in accord from Ga., Ill., Mass., Mich., Miss., Mo., N. Y., and Pa.; nor to conduct a pool room, Cole *vs.* Village of Culbertson, 125 N. W. 287 (Neb. Sup. Ct., Feb. 26, 1910). But a railroad company is unconstitutionally deprived of property when compelled to construct a spur track between stations to a private mill, and furnish cars and facilities to the mill owner for loading the produce of his mill; Nor. Pac. Ry. *vs.* Railroad Commission, 108 Pac. 938 (Wash. Sup. Ct., May 18, 1910). It is not so affected when compelled to remove its tracks at certain points when they endanger the public safety, Bacon *vs.* Boston & M. Ry. Co., 76 At. 128 (Vt. Sup. Ct., May 11, 1910); nor when compelled to run regular passenger trains within state limits, though at a loss. This is not confiscation of property by fixing rates below a remunerative standard, but simply "compelling the corporation to render a service which it was essentially its duty to perform." Mo. Pac. Ry. *vs.* Kansas, 216 U. S. 262, 30 Sup. Ct. 330 (Feb. 21, 1910).

The Bank Guaranty Law of Kansas has been held unconstitutional, because compelling all banks to contribute to a depositor's guaranty fund, which is to be employed in the payment of claims of depositors of any bank becoming insolvent, thus taking the property of one person for the private use of others. First State Bank of Holstein *vs.* Shellenberger, 172 Fed. 999 (Oct. 16, 1909). The cases involving the constitutionality of this law, and of similar laws passed in Nebraska and Oklahoma, were ordered by the Federal Supreme Court on Oct. 24 to be heard together, and to be argued in Dec. or Jan.

Interstate Commerce.—The power of regulating interstate commerce is vested exclusively in Congress, and may be exercised without legislation. Accordingly, the inaction of Congress on the subject is equivalent to the declaration that interstate carriers can make and enforce regulations separating colored and white interstate passengers. Such regulations are reasonable where they accord with the established usages, customs, and traditions of the people. Chiles *vs.* Ches. & O. Ry. 218 U. S. 71 (May 31, 1910).

What is included within the term "interstate commerce" is not easy to say. In Dozier *vs.* Alabama, 218 U. S. 124 (May 31, 1910), reversing 154 Ala. 83, it was held to include the business of the Chicago Crayon Company in soliciting and filling orders for enlargements of photographs and for frames from persons in Alabama. The same court has declared that the term includes the regular intercourse between a correspondence school and text-book company, located in Pennsylvania, and its scholars and agents in Kansas and other states. Such intercourse, it is said, involved the transportation from one state to another of books, apparatus, and papers. Every negotiation, contract, trade, and dealing between citizens of different states, which contemplates and causes such importation, whether it be of goods, persons, or information, is a transaction of interstate commerce under this decision. International Text Book Co. *vs.* Pigg, 217 U. S. 91 (April 4, 1910).

Not every state statute affecting interstate commerce falls under the constitutional ban. The Supreme Court of Minnesota has held that a railroad demurrage law, passed in the exercise of the police power and being in aid of interstate commerce and not a burden thereon is constitutional. Hardwick Farmer's Elevator Co. *vs.* Chicago, R. I. & P. Ry., 124 N. W. 819 (Jan. 28, 1910). In the opinion of this court such matters can be more wisely dealt with by state than by Federal legislation. "It appears probable that uniform Congressional legislation would lack the flexibility and adaptability of local law." (See XXI, *Trade and Transportation.*)

Police Power.—Statutes which injuriously affect personal or property rights, and thus appear to violate one or more of the foregoing constitutional guaranties, are upheld, oftentimes, as a valid exercise of the police power. Neither the liberty of person, nor the liberty of contract, nor the right of property is absolute. All are subject to regulation and restriction imposed by the legislative branch of government in the exercise of its power to protect the safety, health, and welfare of the people. Accordingly, legislation has been sustained which excluded automobiles from certain streets. "They are vehicles of great speed and power," said the Supreme Court of Maine, "frightful to most horses that are unaccustomed to them, and their use introduces a new element of danger to travelers." State *vs.* Mayo, 75 At. 295 (Oct. 11, 1909), following decisions in Ill., Mass., and Mo. Likewise legislation has been held valid which prohibits any person from practicing dentistry or medicine without being registered, and securing a certificate as to his qualifications. Its object is to protect those who employ such practitioners, and the prescribed requirements are not unreasonable. State *vs.* Rosencrans, 75 At. 491 (R. I. Sup. Ct., March 8, 1910); Watson *vs.* Maryland, 218 U. S. 173, 30 Sup. Ct. 644 (May 31, 1910), affirming 105 Md. 650, 66 At. 635.

Legislation reasonably necessary and adapted to the protection of health is sustained, although it imposes restraints upon the freedom of contract or harmfully affects property. City of Rochester *vs.* Macauley-Fien Milling Co., 199 N. Y. 207, 92 N. E. 641 (Sept. 27, 1910), prohibiting smoke from stationary chimneys of a color darker than a prescribed color scale; W. C. Ritchie & Co. *vs.* Wayman, 244 Ill. 509, 91 N. E. 695 (April 21, 1910), limiting the employment of women in any mechanical establishment, or factory, or laundry to ten hours per day. This case does not profess to overrule Ritchie *vs.* People, 155 Ill. 98, 40 N. E. 454, 29 L. R. A. 79, 46 Am. St. R. 315, but distinguishes it on two grounds: First, the act declared unconstitutional in that case did not purport to be a health law; second, it limited the right of women to work in any factory or workshop to eight hours a day, which might have been deemed unreasonable. Benz *vs.* Kremer, 125 N. W. 99 (Wis. Sup. Ct., March 1, 1910), prohibiting bakeries from thereafter being established or operated in a room, the floor of which is more than five feet below the level of the store or adjacent ground. In a dissenting opinion Judge Marshall expressed the view that this legislation was destructive instead of merely regulative of property rights, as there was nothing to show that a bakery five feet below grade level could not be made perfectly sanitary. Swamp lands may be reclaimed by the state for the benefit of the public health, but not for private advantage, such as improving the quality of the land or rendering it more productive or fit for cultivation. Billings Sugar Co. *vs.* Fish, 106 Pac. 565 (Mont. Sup. Ct., Jan. 7, 1910); State *vs.* City of Aberdeen, 109 Pac. 379 (Wash. Sup. Ct., May 31, 1910).

In the following cases statutes were declared constitutional because promoting the welfare of the people without unreasonably restricting personal or property rights. Williams *vs.* Arkansas, 217 U. S. 79, 30 Sup. Ct. 493 (April 4, 1910), affirming 85 Ark. 464, prohibiting drumming or soliciting on trains for business for any hotels, lodging houses, eating houses, bath houses, physicians, masseurs, surgeons, or other medical practitioners. State *vs.* Standard Oil Co., 126 N. W. 527 (Minn. Sup. Ct., April 4, 1910), prohibiting concerns from producing or distributing petroleum from discriminating between different sections of the state in the prices of kerosene, with the intent to destroy the business of competitors and create a monopoly. American Linseed Oil Co. *vs.* Wheaton, 125 N. W. 127 (S. D. Sup. Ct., Feb. 23, 1910), prohibiting the sale or offering for sale of any flaxseed or linseed oil, unless each receptacle had stamped or labeled on it, "Pure linseed oil, raw," or "Pure linseed oil, boiled," and the name and address of the manufacturer. Weed *vs.* Bergh, 124 N. W. 664 (Wis. Sup. Ct., March 1, 1910), requiring all persons doing a banking business to incorporate, the object being to protect the public against the evils present in private banking. Comm. *vs.* Wheeler, 205 Mass. 384 (March 22, 1910), making it a crime to sell milk having less than a prescribed quantity of milk solids, even though the milk had not been adulterated, and the sale is made in honest ignorance of the lack of solids, citing cases in Mass., N. H., and N. Y. Kidd, Dater & Co. *vs.* Musselman Grocer Co., 217 U. S. 461, 30 Sup. Ct. 606 (May 16, 1910), affirming 151 Mich. 478, Sales in Bulk Act of Michigan intended to prevent the defrauding of creditors by the secret sale of substantially all of a merchant's stock of goods in bulk, requiring notice of sale and declaring void as to creditors a sale without such notice. The brief for the defendant in error contains a classification of similar statutes, and of the varying decisions in different states as to their constitutionality.

In the following cases legislation has been declared invalid, although purporting to have been enacted in the exercise of the police power, because it had no real relation to the public health, morals, or safety. Eidge *vs.* City of Bessemer, 51 So. 246 (Ala. Sup. Ct., Dec. 16, 1909), prohibiting the keeping of intoxicants for any purposes in places innocent in themselves. Curran Bill Potting Co. *vs.* City of Denver, 107 Pac. 261 (Colo. Sup. Ct., Feb. 7, 1910), citing cases from Ill., Kan., Mass., N. J., and Pa., prohibiting bill posting because the purpose of the ordinance was not to protect health, morals, or insure safety, but to promote "esthetic or artistic considerations," and because it is an arbitrary and unreasonable interference with the freedom of contract. State *vs.* Miksicek, 125 S. W. 507 (Mo. Sup. Ct., Feb. 12, 1910), following Lochner *vs.* New York, 198 U. S. 45, 25 Sup. Ct. 539, because it arbitrarily fixed the number of days in a week employees should work in bakeries, and between what hours in certain cases, and because it amounted to deprivation of property without due process of law. Missouri Pacific Ry. *vs.* Nebraska, 217 U. S. 196, 30 Sup. Ct. 461 (April 4, 1910), compelling a railroad company to put in switches at its own expense on the application of the owner of any elevator erected within a specified limit.

Initiative and Referendum.—In the absence of a constitutional provision on this subject a state legislature has no right to shirk its duty of making the laws, and has no power to delegate its legislative authority to the people at large. It may, however, make a law to become operative on the happening of a certain contingency, or on the ascertainment of a fact. In Wisconsin that contingency may be the vote of the people as to whether the particular law shall become operative. State *vs.* Frear, 125 N. W. 960 (Wis. Sup. Ct. 961, April 5, 1910). Mr. Justice Marshall, while concurring in the decision on the ground of *stare decisis* in Wisconsin, reviews the authorities in other states and shows that the prevailing rule applicable to general laws as distinguished from local regulations is this: "The will of the legislature must be expressed in the form of a law by their own act. If it is left to the contingency of a popular vote to pronounce whether it shall take effect, it is not the will of the law makers, but the voice of their constituents, which molds the rule of action. The vote makes or defeats the law, and thus the people are permitted unlawfully to resume the right of which they have divested themselves by a written constitution, to declare by their own direct action what shall be law."

In some states where the initiative and referendum are authorized by constitutional provisions, the difficulty in working the system is noticeable. See *in re* Initiative Petition No. 2, "The New Jerusalem" Proposition, 109 Pac. 823 (Okla. Sup. Ct., June 9, 1910); Board of Education *vs.* State, 109 Pac. 563 (Okla. Sup. Ct., May 10, 1910); and the following proposed amendment to Art. IV of the Constitution of Oregon, "increasing initiative, referendum, and recall powers of the people; restricting use of emergency clause and veto power on state and municipal legislation; requiring proportional election of members of the legislative assembly from the state at large; annual sessions and increasing members' salaries and terms of office; providing for elections of speaker of House and president of Senate outside of members; restricting corporate franchises to twenty years; providing ten-dollar penalty for unexcused absences from any roll call, and changing the form of oaths of office to provide against so-called legislative logrolling." Notwithstanding the multifarious character of this proposition, and of others presented to the citizens of Oregon at the November election, the voters are reported to have evinced much discrimination in dealing with the various proposals—thirty-two in all. Nine were adopted, and twenty-three defeated. Under Art. VII, Sec. 4, of the New York Constitution, an act making provision for issuing bonds of the state to an amount not exceeding $2,500,000, for the Palisades Interstate Park, was submitted to the people at the general election of 1910 and adopted. (See VI, *Popular Government.*)

Direct Nomination of United States Senators.—This may be authorized by a state primary law, provided the members of the legislature are left free as before the law to exercise their judgment in the choice of senators, and are under no legal or moral obligation to carry out the verdict at the primary, except as it coincides with their deliberate judgment after being advised by the result of the primary and in other proper ways. State *vs.* Frear, 125 N. W. 961 (April 21, 1910).

Primary Election Laws. — Their constitutionality has been sustained in Nevada, Riter *vs.* Douglass, 109 Pac. 444 (Sup. Ct., June 3, 1910), although its validity was assailed upon numerous grounds; in Wisconsin, State *vs.* Frear, 125 N. W. 961 (Sup. Ct., April 5, 1910); in Idaho, Adams *vs.* Lansdon, 110 Pac. 280 (Sup. Ct., Aug. 11, 1910). A primary law was held unconstitutional in Tenn., Ledgerwood *vs.* Pitts, 125 S. W. 1036 (Sup. Ct., Feb. 26, 1910), because of particular provisions, though the power of the legislature to enact primary election laws was not questioned. (See VI, *Popular Government.*)

Employers' Liability and Workmen's Compensation Acts.—The former of these have for their purpose the modification of the common law rules, governing the liability of employers to their employees for injuries received during their service. In El Paso & N. E. Ry. *vs.* Gutierrez, 215 U. S. 87 (Nov. 15, 1909), the constitutionality of the Federal Employers' Liability Act of 1906 was sustained, so far as it relates to common carriers engaged in trade and commerce in the District of Columbia, and the territories of the United States, although in Employers' Liability Cases, 207 U. S. 463, 28 Sup. Ct. 141, the act had been held unconstitutional so far as it attempted to modify the liability of other carriers. In Watson *vs.* St. Louis, I. M. Ry., 169 Fed. 942 (June, 1909), the Federal Employers' Act of 1908 was held constitutional as it is confined to common carriers by rail, engaged in interstate commerce, and their employees while thus actually engaged. It was held unconstitutional in Hoxie *vs.* N. Y., N. H. & H. Ry., 82 Conn. 352, 73 At. 754 (June, 1909), because the fifth section which declares that any contract between an interstate carrier and any of its employees in such business, intended to exempt itself from any liability created by the act, shall to that extent be void, is in violation of the fifth amendment, as tending to deprive the parties to such a contract of their liberty and property without due process of law; also because Section 3, as to comparative negligence is in violation of the same amendment, and because it is beyond the power of Congress to create the remedy for injuries causing death, given by this act.

Workmen's Compensation Acts have for their purpose the shifting of the burden of industrial accidents from the workman to the employer. Such an act is Chapter 674 of the Laws of N. Y., 1910. It applies only to workmen engaged in manual or mechanical labor in specified employments which are deemed to subject the workman to extraordinary risks to life and limb. Its constitutionality has been assailed, and sustained in Ives *vs.* South Buffalo Ry., 43 N. Y. L. J. 2371, 68 Misc. 643 (Sup. Ct. Spec. Term, Erie Co., Sept. 30, 1910). These topics are admirably discussed by Prof. Floyd R. Mechem, 44 Am. Law Rev., 221. (See XVI, *Labor Legislation.*)

Other Judicial Decisions.—Many cases noted in the foregoing paragraphs deal with private law as well as with constitutional law problems. It does not seem desirable, therefore, to attempt to discuss, or even to classify with accuracy the multitude of other decisions handed down by our courts, during the year. Nor have we space for the consideration of more than a few of the most notable topics, which have not been specially dealt with in the decisions already cited. It is believed that the selections which follow give a fair idea of the trend of legal development by judicial decisions, during the year.

Injunctions and Contempt Proceedings.—These have been employed frequently, and in a great variety of litigations. It is said that the Federal Reporters show that 386 injunctions were granted by the Federal courts for all purposes from 1903 to 1910, of which only about six per cent were connected with labor controversies. (Charles E. Littlefield, 36 Annals Am. Acad. 109.) About the same ratio is found in State and Federal courts during the current year. Among the most important cases involving injunctions, and contempt proceedings to punish violators thereof, are the following: Herndon *vs.* Chicago R. I. & P. Ry., 218 U. S. 135, 30 Sup. Ct. 633 (May 31, 1910); Western Union Tel. Co. *vs.* Kansas, 216 U. S. 1, 30 Sup. Ct. 280 (Jan. 31, 1910); Pullman Co. *vs.* Kansas, 216 U. S. 56, 30 Sup. Ct. 232 (Jan. 31, 1910); Ludwig *vs.* Western Union Tel. Co., 216 U. S. 146, 30 Sup. Ct. 280 (Feb. 21, 1910); Western Union Tel. Co. *vs.* Andrews, 216 U. S. 165, 30 Sup. Ct. 286 (Feb. 21, 1910); Coal & Coke Co. *vs.* Conley, 67 S. E. 613 (W. Va. Sup. Ct. of Appeals, March 8, 1910, enjoining state officers from enforcing an unconstitutional statute); F. H. Peavey & Co. *vs.* Union Pac. Ry., 176 Fed. 409 (March 3, 1910); Interstate Commerce Com. *vs.* Nor. Pac. Ry., 216 U. S. 538, 30 Sup. Ct. 417 (March 7, 1910), enjoining Interstate Commerce Commission from enforcing an order which they had not legal authority to make. Stewart *vs.* Finkleston, 92 N. E. 37 (Mass., May 18, 1910); Spilling *vs.* Hutcheson, 68 S. E. 250 (Va. Sup. Ct., June 9, 1910), enjoining violations of building line restrictions. Stotler *vs.* Rochelle, 109

Pac. 788 (Kan. Sup. Ct., July 9, 1910); enjoining the establishment of a cancer hospital when a nuisance to adjoining property owners. N. Y. & N. J. Telephone Co. *vs.* Snyder, 75 At. 897 (N. J. Eq., March 9, 1910), enjoining contractor from using dynamite so as to injure plaintiff's property. Colgate *vs.* James T. White & Co., 180 Fed. 882 (Aug. 3, 1910), enjoining the publication of plaintiff's biography in a particular set of books. Schwarez *vs.* International Ladies' Garment Workers' Union, 68 Misc. 528 (N. Y. Sup. Ct., Aug., 1910), enjoining the union and other persons from inducing or coercing, or attempting by any species of intimidation, threats, or fraud, any employee to quit work.

In Ellis *vs.* Hurst, 121 N. Y. Supp. 438 (Feb. 28, 1910), and Binns *vs.* Vitagraph Co., 67 N. Y. Misc. 327 (April, 1910), defendants were enjoined from using the names or pictures of the plaintiff for advertising purposes or for the purpose of trade. The injunctions in these cases were authorized by statute (Consolidated Laws of N. Y., Ch. VI, Secs. 50 and 51), enacted to enlarge the field of injunctive redress.

A novel and interesting exercise of injunctive remedy is found in Cascade Town Company *vs.* Empire Water & Power Company, a case decided by Judge Lewis in the U. S. Court in Colorado, Oct. 3, 1910. The Water company sought to take the water of a stream flowing from Pike's Peak through a cañon, at the mouth of which Cascade is situated. The town of Cascade obtained an injunction against this diversion, on the ground that the waters had been appropriated to beneficial uses by being made to produce a luxuriant arboreal and floral growth and to minister to the scenic beauty which gave prosperity to Cascade as a summer resort. The court said: "Public health is a beneficial use. Rest and recreation is a beneficial use, and for that purpose water is used to make beautiful lawns, shady avenues, attractive homes and public parks with lakelets, and streams and artificial scenic beauty. Parks and playgrounds and grass are benefits, and their uses beneficial, although there is no profit derived from them. The world delights in scenic beauty, but must scenic beauty disappear because it has no appraised cash value? It is, therefore, held that the maintenance of the vegetation in Cascade Creek, by the flow and seepage and mist and spray of the stream and its falls as it passes through the cañon, is a beneficial use of such waters within the meaning of the constitution."

Violators of injunctions were punished for contempt in Carr *vs.* District Court, 126 N. W. 791 (Ia. Sup. Ct., June 14, 1910), injunction forbidding school district officers from paying certain warrants; Hathorn *vs.* Natural Carbonic Gas Co., 121 N. Y. Supp. 683 (March 9, 1910), enjoining the pumping and sale of certain mineral water; Ex parte Young, 129 S. W. 599 (Tex. Sup. Ct., June 22, 1910), enjoining the illegal sale of liquors. In all of these cases it was held that it is no justification for the violation of an injunction that it was improvidently granted or has been modified subsequently.

Ross *vs.* La Cagniga, 68 Misc. 497 (N. Y. Sup. Ct., Aug., 1910), judgment debtor fined for contempt for disobedience to an order to submit to examination in proceedings supplementary to execution.

Monopolies and Trusts.—These continue to be an inviting topic of legislation and a fruitful source of litigation. Some of the judicial decisions relating to them have been noted under the head of police power. Among other important decisions on the subject are State *vs.* Creamery Package Mfg. Co., 126 N. W. 126 (Minn. Sup. Ct., April 22, 1910), forfeiting the charter of a Minnesota corporation, and prohibiting the further transaction of business in Minnesota by an Illinois corporation for entering into a pool and combination in restraint of trade; Merchants Ice & Cold Storage Co. *vs.* Rohrman, 128 S. W. 599 (Ky. Sup. Ct., May 18, 1910), plaintiff was unable to enforce contract looking to the consolidation of ice manufacturing plants in Louisville, because made to control the market and suppress competition; Ware-Kramer Tobacco Co. *vs.* American Tobacco Co., 180 Fed. 160 (June 16, 1910), holding that one injured in business by another through a monopolistic combination in violation of the Federal antitrust law of 1910, can maintain a suit for his damages.

Under the antitrust provisions of the Sherman Act, the Federal Government has instituted and continued various judicial proceedings during the year. For example, in Jan. the attorney general was instructed by Pres. Taft to prosecute suit for a dissolution of the Union Pacific and the Southern Pacific Railway companies. In March the National Packing Company and the subsidiary companies were indicted in Chicago for violations of the Sherman Law. In May an injunction was obtained against numerous railway companies restraining them from increasing their freights as they had announced they would do.

Several important cases involving the proper construction and application of the Sherman Law are now before the Federal Supreme Court, awaiting decision. The Tobacco Trust and Standard Oil cases were ordered reargued, but owing to the death of Justice Brewer, and of Chief Justice Fuller and the retirement of Justice Moody, the argument has been deferred until the membership of the court should again be complete. (See XIV, *Corporations.*)

Trade Marks and Unfair Competition.—The litigation on these subjects is enormous in England and in this country, although it is far more active and varied with us than across the sea. English digests show but a tithe of the judicial decisions which flood our reports on trade marks, and disclose but few cases dealing with the topic of unfair competition. In the latest edition of his work on Torts, Sir Frederick Pollock notes the remarkable growth in the United States of the law of unfair competition, and declares that the term is little known as yet in English courts. He adds. "It seems convenient as clearly marking the distinction of cases where the jurisdiction is founded on fraud, or something equivalent to fraud, from those where a statutory property or monopoly is in question." The distinction between a monopolistic trade mark and a trade name which may be the subject of unfair competition, is brought out clearly in Florence Mfg. Co. *vs.* J. C. Dowd & Co., 178 Fed. 73, 34 *Trade-Mark Record* 410 (April 11, 1910). The plaintiff sued for infringement of his registered trade mark "Keepclean," as applied to brushes, and for unfair competition by the defendant in using the term "Sta-Kleen" of his brushes, and in simulating plaintiff's boxes, labels, and manner of dressing the goods. The court held that neither "Keepclean" nor "Sta-Kleen" was the subject of a valid, monopolistic trade mark, as each was descriptive merely. Indeed the patent office had refused them registration under the trade-mark statute of 1905 on this ground. But the court held that the defendant's conduct did amount to unfair competition, being such as naturally to mislead the public into thinking that the defendant's "Sta-Kleen" brushes were identical with plaintiff's "Keepclean" brushes. "The argument," said Judge Coxe, "in these cases is a simple one: Where the defendant has so dressed his goods that they may be mistaken for the goods of the complainant, his motive in doing so is either honest or dishonest. If honest, he should stop voluntarily; and if dishonest, he should be compelled to stop." And the court so compelled him.

In the *Trade-Mark Record* will be found an abundance of decisions by the United States Patent Commissioner, as well as by Federal and State courts, upon these topics. An interesting feature of the *Record* is the lists of names which have been registered as trade marks, and of those which have been refused registration.

Criminal Libel.—The jurisdiction of the Federal courts in cases of criminal libel has been carefully considered in two proceedings growing out of the alleged libels printed by the Indianapolis *News* and the New York *World* relating to the Panama Canal affair. Indictments were found against the publishers of the two papers. The one against the publishers of the *News* was found in the District of Columbia and charged them with having committed the crime of libel in that District. On an application for their removal from Indianapolis to Washington for trial, the District Court in Indiana held that if any crime had been committed, it was committed in the district of Indiana, and that under the Sixth Amendment to the Federal Constitution, they could be indicted and tried in that district only. It was shown that the *News* was printed in Indianapolis and that the only publication of the alleged libel in the District of Columbia consisted in sending about fifty copies by mail from Indianapolis directly to subscribers in the District of Columbia. United States *vs.* Smith, 173 Fed. 227 (Oct. 28, 1909).

In the case against the *Press Publishing Co.* (the publisher of the New York *World*), the indictment, found in the Southern District of New York, charged that the articles claimed to be libelous were composed, printed and published within the confines of West Point and of the post office building in New York City, both places being under the exclusive jurisdiction of Congress. It was admitted that the actual composition and printing were done outside of those places, and that the great bulk of the copies of the *World* containing the articles in question were circulated in the State of New York. In fact only twenty-nine copies were sent by the defendant to West Point, and only one copy to the post office building, and these went by mail addressed to subscribers. The District Court quashed the indictment Jan. 26, 1910, on the ground that the alleged crime was not begun and ended, nor primarily committed on a national property, and was therefore not indictable in the Federal courts. (See *New York Law Journal*, Feb. 2, 1910.)

The government sued out a writ of error, which was argued in the Federal Supreme Court, Oct. 24, 1910.

REFORM IN LEGAL PROCEDURE

The reform of practice in both civil and criminal cases is at present receiving much attention. For the past few years speakers on various occasions as well as writers in magazines and in the newspapers, have called attention to various matters in which the system of procedure in our courts is considered deficient. This agitation has extended to laymen and the articles and addresses have been not only technical and addressed to special audiences, but have also been popular and intended to arouse a general sentiment in favor of reform.

At the meeting held in Jan., 1910, under the auspices of the National Civic Federation to consider uniformity in legislation, Pres. Taft in his opening address to the conference, laid great emphasis upon the necessity for a reform in this direction. The President has also referred to this subject in various other addresses, characterizing it as a matter in which there is the greatest need of reform.

The American Bar Association at its meeting in 1907 provided for a special committee "To Suggest Remedies and Formulate Proposed Laws to Prevent Delay and Unnecessary Cost in Litigation." Everett P. Wheeler, of New York, is chairman of this committee. In addition to reports to the Bar Association covering various phases of the subject, the committee has formulated two bills which have been indorsed by the association and presented to Congress, where they are now pending. The first one provides that a judgment shall not be set aside or reversed or new trial granted in any case unless it appears that the error complained of has affected the substantial rights of the party complaining; that issues of fact may be alone submitted to the jury, reserving questions of law for subsequent decision and that an appellate court may direct judgment to be entered on the verdict, if necessary; and that writs of error in criminal cases and appeals in *habeas corpus* shall not issue unless upon a certificate of probable cause. The other bill provides for the appointment of official stenographers in the Federal courts. In June, 1910, this committee appointed a subcommittee to prepare a model practice act.

The National Civic Federation at its conference on uniform legislation, in Washington, in Jan., 1910, provided for the appointment of a committee on reform in legal procedure, of which Ralph W. Breckenridge, of Omaha, Neb., is chairman. This committee has appointed a subcommittee to prepare a model practice act in cooperation with the similar subcommittee of the American Bar Association. It has also appointed a special subcommittee upon reform in criminal procedure.

The American Institute of Criminal Law and Criminology, organized in 1909, has for one of its objects the study of the administration of criminal justice and the securing of necessary reforms. This body began publication in May, 1910, of a bi-monthly journal covering the field of criminal law and criminology, which is devoting considerable attention to the question of reform in criminal procedure.

The American Academy of Political and Social Science devoted its annual meeting to a discussion of the administration of justice in the United States.

The state bar associations are in many cases considering the question of reform in practice, and in a number of meetings during the year this subject has received extended consideration. The bar associations in the following states have special committees which have various aspects of this question under consideration: California, Connecticut, Florida, Georgia, Idaho, Iowa, Maine, Minnesota, Mississippi, Ohio, Oklahoma, South Dakota, Tennessee, Texas, Virginia.

The year 1910 has not seen any notable advance in the reform of procedure. There has been no particular significant enactment covering the subject either on the part of state legislatures or by Congress. It has, however, seen an increase in the agitation for improved methods in the administration of justice and the crystallizing of the agitation into agencies which may be expected to accomplish something definite.

In New York an aggressive campaign for simplification of procedure was waged during the legislative session of 1910, by the Bar Association of the City of New York, but without great results, beyond certain reforms in Surrogate's Court practice.

Reform in the Constitution of Courts.—While but little progress has been made during the year in reforming legal procedure, a considerable advance is observable in court reformation. This is especially notable in New York, where the entire subject of inferior courts of criminal jurisdiction received very careful investigation resulting in a statute largely reorganizing these courts and establishing many new features. (See Chapter 659; Laws, 1910.)

Domestic Relations Court. — This was created by the statute for the arraignment or trial of persons compelled by law to support relatives, as well as those charged with abandonment or nonsupport of wives, and is to be held daily in the boroughs of Manhattan and of Brooklyn. (Sec. 74.) During the first twenty-four days of its existence, the court disposed of 327 cases, required twenty-four husbands to give bonds for the support of their wives and families, discharged 187 offending husbands, in response to the pleas of forgiving wives, and held 143 for examination.

Women's Night Courts.—The same statute provides separate night courts for cases against disorderly women. (Sec. 77.) Night courts were established to put a stop to the evil known as the station-house bond. A separate place of detention is provided, also, for these women prisoners, both before and after being heard, "and the young and less hardened are to be segregated, so far as practicable, from the older and more hardened offenders." Provision is also made (Sec. 78) for the identification of prostitutes by the finger-print system. Prostitutes after conviction are to be taken to a room adjacent to the court room, and there physically examined by a woman physician of the department of health detailed for such purpose. If they are found to be afflicted with any communicable venereal disease, they are to be committed to a public hospital having a ward for the treatment of such disease. This last feature of the law has been assailed by woman suffragists as unconstitutional, because denying to woman the equal protection of the laws. They insist that the provisions for medical examination, commitment and medical treatment should be applied "to all solicitors alike, men as well as women."

Juvenile Courts.—It is provided in the same statute that a separate court for the trial of children shall be held in a building separate and apart from one used for the criminal trial of adults. (*Ibid.*, Secs. 35–39.) Children taken into custody for trial in this court are not to be taken to a police station, but if the children's court is not in session, then to the rooms of a duly incorporated society for the prevention of cruelty to children. If the child is charged with an offense of the grade of a misdemeanor, the justice holding the court shall so far as is consistent with the interest of the child and of the public consider the child not as upon trial for the commission of a crime, but as a child in need of the care and protection of the state, and may deal with him accordingly. Other statutes confer similar jurisdictions on courts in other parts of the state. (See Chapters 559, 612, and 676.)

It will be observed that most of these juvenile courts belong to the criminal side of the judiciary. The commission upon whose report the first of these statutes was based were urged to follow the precedent of certain other jurisdictions and to recommend the establishment of a court in the nature of a court of chancery to which the child should be brought by civil process. In their opinion the constitutional and legal difficulties involved in an attempt to confer such jurisdiction, except in the Supreme Court, where it now resides, would not warrant the experiment. "Children's courts," said the commission, "are as yet so new in our jurisprudence that the commission believes it to be safer that the development of the law governing their administration be along careful and steady lines of gradual improvement based upon the experience of actual administration in the various juvenile courts throughout the state, than that there be adopted at this time any departure, experimental in character, which involves in the main the application of theories not yet fully tried out. Children under sixteen, however, should be relieved where possible of the stigma of conviction for crime."

The pioneer in juvenile court legislation is said to be M. Joseph Harson, of Providence, R. I. The act drawn by him was presented to the Rhode Island Legislature, Feb., 1897, and became law in the following year. In July, 1899, a juvenile court was opened in Chicago under a statute prepared by Harvey B. Hurd, which made provision for dealing with children's cases not as criminal proceedings, but as chancery proceedings, and the delinquent children were not treated as prisoners at the bar, but as wards of the State. Colorado followed in this line, soon after, and since that time similar legislation has been adopted in over thirty American jurisdictions, as well as in Great Britain and Ireland, Canada and the Australian colonies. Judges Lindsey, of Denver; Mack, of Chicago; Staake, of Philadelphia; DeLacy, of Washington; Deuel, of New York, and many others have rendered noble service in these courts, which were one of the subjects of discussion at the fourteenth annual meeting of the Academy of Political and Social Science, held in Philadelphia, April 8 and 9, 1910.

New Jersey amended her Juvenile Court Act so as to prevent children from being detained in police stations or county jails. (Laws, 1910.)

UNIFORM STATE LEGISLATION

The movement for uniformity in state legislation has made notable progress during the year. This is due in part to legislative reference bureaus in Alabama, Indiana, Michigan, Missouri, Montana, North Dakota, Ohio, Pennsylvania, Rhode Island, South Dakota, Texas, and Wisconsin, and perhaps other states, which enable legislators to compare bills brought before them with similar bills or statutes in sister commonwealths.

Another influence contributing to this result is the incorporation and endowment of the Legislative Drafting Association in New York, having for one of its leading purposes, "promoting precision and uniformity in the written law and rendering technical aid to the advancement of the legislation which best conforms to the needs of the American people." The incorporators are John Bassett Moore, Joseph P. Chamberlain, George Winfield Scott, Middleton Beaman, and Thomas I. Parkinson.

Still another influence is that of the Commercial Law League of America, which held its annual meeting at Narragansett Pier, July, 1910. This body strives for uniformity in state legislation, because its members believe that "uniform laws aid and develop commerce."

A fourth source of influence is the National Association of Probate Judges, organized last Sept. with Judge J. C. Tallmadge of Catskill, N. Y., as president, for the especial purpose of securing the unification of probate laws in the various states.

Commissioners on Uniform State Laws.—The chief agency, however, for the advancement of this cause is the body of commissioners appointed for the express purpose of promoting uniformity of state laws. They gather in annual conference a few days before the meeting of the American Bar Association, and now represent fifty different jurisdictions. None are salaried officers, while many of them are compelled to pay their personal expenses and to bear the disbursements incidental to their reports. Florida has declared that the honor of performing the duties of commissioners shall be sufficient compensation, and Illinois requires her commissioners to serve without expense to the State and without salary. On the other hand, a few states provide for the expenses of their representatives and contribute to the expenses of the conference. That body, however, has not accumulated a fund sufficient to meet its needs, and has appealed to the states for a more generous support. On one occasion, it received a considerable sum from private sources, but the propriety of accepting such gifts has been questioned, and hereafter the conference will limit itself, probably, to donations from public treasuries.

Even with very limited resources, the conference has been able to draft, and present for adoption by state and territorial legislatures a considerable number of important acts. That which has been longest before the public and has been enacted into statute by the largest number of constituencies is the Negotiable Instruments Law. Thirty-eight states and territories, including the District of Columbia and Hawaii, have adopted it. The Warehouse Receipts Act has been adopted in nineteen states and territories, Maryland having added it to her statute book to take effect June 1, 1910. The Uniform Sales Act was also adopted by Maryland during 1910, and is now law in seven states. During 1910 Maryland and Massachusetts adopted the Uniform Bill of Lading Act and the Uniform Stock Transfer Act. During the same year Louisiana and Massachusetts enacted the Uniform Law for the Return of Marriage Statistics. Three states have adopted the Uniform Divorce Act, viz.: Delaware, New Jersey, and Wisconsin, while most of its principles are embodied in the statutes of Illinois. At the twentieth annual meeting of the conference drafts of the following acts were considered, viz.: a uniform incorporation law, a uniform partnership law, a uniform marriage license law, a uniform family desertion law, a uniform child labor law, and uniform laws governing the execution and probate of wills. Some of them were carefully discussed and subjected to a critical examination, while others were reported for future consideration.

The Act on Family Desertion and Nonsupport, after discussion and modification was recommended by the conference to the various legislatures. The original draft followed very closely the Act of Congress of March 23, 1906, for the District of Columbia, but important changes were made by the conference, especially with respect to illegitimate children. They are excluded from the purview of the act, and their rights and interests are remitted to bastardy statutes. In the opinion of the conference the problem of the desertion or nonsupport of wife and children differs radically from that of the nonsupport of illegitimate children, and it is unwise to deal by one measure with the two widely disparate evils.

The act relating to the execution of wills was recommended to the various legislatures. Its substance is as follows:

Sec. 1. A last will and testament, executed without this State in the mode prescribed by the law, either of the place where executed or of the testator's domicile, shall be deemed to be legally executed and shall be of the same force and effect as if executed in the mode prescribed by the laws of this State, provided said last will and testament is in writing and subscribed by the testator.

The conference reiterated its approval of the Torrens system of land registration and requested the commissioners to bring the matter to the attention of their several legislatures. This system is in successful operation in several states, notably California, Minnesota, and Massachusetts. It was enacted into law in New York (Ch. 444, L. 1908), but the first title confirmed under its provisions is said to have been secured in Sept., 1910. The prime purpose of this system is to provide a method by which "title to real property shall be settled and made practically unassailable, and then shall be retained in that condition and capable of quick and easy use and manipulation."[1]

Marriage and Divorce Laws.—A conference of state commissioners for securing uniformity in state legislation was first officially suggested by Gov. David B. Hill of New York in his annual message for 1889, "to consider the question of uniform marriage and divorce laws." In view of the origin of the conference it is somewhat remarkable that this body was not able to agree upon a satisfactory bill relating to either marriage or divorce until 1905, and its bill of that year was laid aside for the Divorce Act formulated by the Divorce Congress of 1906. The conference recommended that the commissioners do all in their power to secure its adoption in their several jurisdictions. A later conference decided to limit its efforts to securing the enactment of the jurisdictional clauses of the bill, believing that their adoption would put an end to those divorces which are known as migratory. Meanwhile, as the president of the conference pointed out in his last report, "The states being foreign to each other in all matters relating to divorce, there will remain uncertainty as to the validity of divorces, with all the accompanying evils of a doubtful status of the parties and of danger to the legitimacy of children and to property interests, so long as the statutes of the states are not uniform on the subject of jurisdiction." He adds, "As is well known, the divorce congress believed that they chose the lesser of the evils by adopting the theory that jurisdiction should be granted where one of the parties was a resident of the state, under careful restrictions as to the place where the cause arose, and as to the service of notice either personally or by publication."

The evils of the present diversity of statute and common law on this topic have received recent illustration in the case of Catlin *vs.* Catlin, decided by Judge Edward B. Whitney of the New York Supreme Court (*New York Law Journal*, Oct. 6, 1910), and destined undoubtedly to repeated appeals, if the parties live and find themselves able to indulge in that luxury. The plaintiff sued out a writ of *habeas corpus* for her children, the custody of whom had been awarded her by a Nevada court which had also granted her a divorce from the defendant. Judge Whitney dismissed the writ, holding that the plaintiff is still the wife of the defendant, and that the Nevada divorce was worthless, as the decree granting it was not based upon personal service within the State of Nevada nor upon the appearance of the defendant, and that the matrimonial domicile of the parties at the time of the decree was New York. (See XV, *Marriage and Divorce.*)

The National Civic Federation devoted its last conference (Washington, Jan., 1910) very largely to the subject of uniform state legislation. Many of its members were ignorant of the work which had been accomplished by the commissioners on uniform state laws, and its president frankly confessed that the federation was not aware of the existence of these commissioners until its conference had been called. As soon as it was advised of their existence, their purposes and their work, the federation decided to put itself behind the movement inaugurated by the commissioners and help carry it forward.

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[1] Progress in Land Title Transfers, Alfred G. Reeves, 8 Col. Law. Rev. 438.

Many of the commissioners became members of the federation conference, and the latter body adopted resolutions approving most of the important acts formulated by the commissioners. "At the same time that this conference was in session, the governors of more than thirty of the states were also meeting in Washington, and the resolutions were submitted to that body by a committee from the conference. It is obviously of the first importance to the cause of uniformity that the governors of the different states should be familiar with the purposes of the conference of commissioners and should lend their active aid to the work that it has in hand, by urging upon their legislatures the passage of a law authorizing the appointment of commissioners and appropriations for their expenses. It is therefore peculiarly gratifying to those who have the cause of uniformity at heart, that this opportunity should have been afforded of presenting the subject personally to the governors of so many of the states."[1]

The House of Governors.—The governors' conference, referred to in the foregoing paragraph, was at once evidence of the growing demand for uniformity in state laws, and promise of larger accomplishment in the future. Credit for its initial suggestion belongs to William George Jordan, the permanent secretary of the conference, who embodied it in a pamphlet which he sent to Pres. Roosevelt and to the governors of the country early in 1907. The pamphlet was entitled, "The House of Governors. A New Idea in American Politics, Aiming to Promote Uniform Legislation on Vital Questions, to Conserve State Rights, to Lessen Centralization, to Secure a Fuller, Freer Voice of the People and to Make a Stronger Nation."

A conference was held in 1908 upon the invitation of Pres. Roosevelt, to consider the question of conservation. The conference of 1910 was called upon the initiative of the governors themselves. Its organization was effected in accordance with the following report:

First. There shall not be any permanent president of the conference.

Second. A governor shall be elected to preside at each session of the conference.

Third. The committee on organization shall make recommendation to the conference at the end of each session of a governor to preside at the next session, and if the recommendation be approved by the conference, he shall be the chairman for that session.

Fourth. There shall be a permanent secretary of the conference, selected by the conference at its pleasure.

Fifth. The proceedings of the conference shall be stenographically reported.

Sixth. There shall be no rules for the government of the conference in discussion or debate, and all procedure shall be at all times under the direction of the conference itself.

The scope and purpose of these conferences were outlined in an admirable address by Gov. Hughes of New York. The members were present, he reminded them, in their own right as state executives. They had not met to deal with questions admittedly of national concern, nor to accelerate or develop opinion with regard to matters which had been committed to Federal power. It would be unfortunate, in his judgment, if they should endeavor to develop an extra constitutional body to deal with questions which are not the concerns of the states as such. The advantage of these meetings must be found in the formation of common sentiment, in generating the necessary motive power to secure greater uniformity of state action and better state government. The state executive, he declared, "represents in the public mind not simply administrative power, but legislative initiative, and in a peculiar degree, although confined to prescribed functions, he becomes the exponent of state policy. A conference of governors can, therefore, be expected to accomplish more than conferences of legislative committees or of appointed commissioners. Accord between executives upon questions which they have carefully considered together cannot fail to be of enormous influence." Three groups of questions would certainly be embraced in the scope of the conferences: Those relating to uniform laws, those relating to matters of state comity, where causes of friction may be avoided, and those relating to matters of local concern which can be better treated in the light of the experience of other states.

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[1] Address of Pres. Smith at the conference of commissioners, Aug. 1910.

The relation to subsist between these conferences and those of the commissioners on uniform laws was suggested in the following sentence: "It would not be possible for governors in conference to undertake the drafting of uniform laws, but their united consideration of their importance and of proposed statutes drafted by commissioners of their appointment, will bring these matters into deserved prominence and supply for the progress of uniform legislation a much needed impetus."

Third Conference of Governors.— At the third conference held in Frankfort and Louisville, Ky., Nov. 29–Dec. 1, 1910, twenty-four governors and four governors-elect were in attendance. The session was opened by Gov. Willson of Kentucky, who emphasized the idea that the state executives had met for the purpose of exchanging views and not as a "House of Governors." Pres. Taft sent a letter, expressing his sympathy with the objects of the meeting, which he understood "to be for the general national welfare by uniformity of state legislation upon subjects having general national interest which are not, by the Constitution, intrusted to Congress and the central government." The most notable address was that of Gov. elect Wilson of New Jersey. "We are drawn together," he said, "by friendliness and sympathy and the common interests of similar tasks. . . . The thing we are here trying to do is to coördinate and form some of these otherwise vagrant forces. It is an extraconstitutional enterprise, but natural, spontaneous, imperative, perhaps creative. In brief we are setting up, outside the sphere of the Federal Congress, a new instrument of political life, national in its character, scope, and intention, an instrument not of legislation but of opinion, exercising the authority of influence, not of law. . . .

"Our function is one of leadership. Leadership, I take it, is a task of suggestion, of adaptation, of the quickening of thought and the devising of means. It is our privilege and duty to study the problems common to all the states and to suggest the means by which the states, without loss of their natural variety or of their opportunities of local adaptation, may yet freely throw their energies into a common task of protection and development, as if in the spirit of a single commonwealth, their measures varied, but their purpose the same."

Employers' liability and workmen's compensation acts received considerable attention. Gov. Hadley, of Missouri, suggested that a committee of governors be appointed to draft a uniform law on this topic, but the suggestion did not meet with approval. Later, however, the conference adopted his resolution that commissioners, who are investigating the subject in the several states, send a report of their conclusions to all of the governors.

The new nationalism, as applied to the conservation of natural resources, was criticised by Gov. Norris of Montana. It originated, he declared, in the eastern states, where natural resources had been wasted, and whose people now sought to share in the natural resources of the younger commonwealths. He characterized the policy as a selfish one on the part of the older states. Gov. Noel, of Mississippi, supported the policy thus attacked. The Union, he said, was one great family, and each state should be willing to help the others. Gov. Norris retorted that, because Mississippi had wasted her natural resources, it did not follow that her people should now be allowed to recoup themselves at the expense of the younger states, by having the natural resources of the latter transferred to the control of the Federal Government. Gov. Shafroth and Gov. Sloan insisted that monopolies could be better controlled by state legislatures than by Congress.

The subject of automobile reciprocity is reported to have interested only a few of the eastern governors. Its discussion was limited to Gov. Fort of New Jersey, Gov. Weeks of

Connecticut, and Gov. Draper of Massachusetts. The present laws of New Jersey and Pennsylvania were criticised as being too severe on automobilists, and a uniform law for all of the states was favored.

The direct primary was the subject of an address by Gov. Fort, who insisted that, if the rules of the primary system are observed, "bossism" will become impossible. Money, he declared, was rapidly losing its importance as a factor in elections, while young men with high ideals were gaining in influence. Party organizations, he thought, should try to elect their candidates, but should have nothing to do with the selection of nominees. "The only successful primary will be the one that gets closest to the people." In the discussion that followed, Gov. Hadley expressed the opinion that the direct primary had come to stay, and that the abuses of the convention system had brought about this result.

Several topics were presented by persons who were not members of the conference. Miss Laura Clay, president of the Kentucky Equal Rights Association, addressed the governors in behalf of equal suffrage for women. Gamaliel Bradford, of Boston, argued in favor of making the governor's office the real organ of political authority in each state, and of curbing the legislature. The plan which he suggested, and said would be a great benefit, was that the governor have a representative in each house of the legislature, to be appointed and removed by himself, who would have the right of debate, and whose duty it would be to answer questions in open session. He said that through those men the governor could go through the whole subject of procedure, and make clear to the people the defects of the present system, and could arouse and guide a current of public opinion which might soon prove to be irresistible, while the prize held out would be a stimulant to the most honorable ambition.

No action was taken on any communications received by the conference, but all were referred to a committee. For its lack of any affirmative action, the conference has been criticised in some quarters. So much of its time and energy was given to social pleasures, it is reported, that but little business was transacted, and, although a five days' session was planned for, the conference adjourned at the end of the third day. The fourth meeting will be held next Sept., at Spring Lake, N. J., a place remote from the social activities which characterize state capitals and large cities, and which have occupied the attention of the governors while in Frankfort and Louisville. The plan of organization, proposed by Gov. Sloan and adopted in executive session, requires the committee on arrangements to present to each legislature a statement of the object of the next conference; to ask an appropriation for the maintenance of the organization; to select subjects for discussion with great care, and to provide that each paper prepared for presentation be sent to all the governors in advance of the meeting, so that it can be subjected to intelligent discussion. That ample time may be had for a full and free exchange of views, a week will be set apart for each annual session.

Objection was made by some of the executives to the title "House of Governors," on the ground that it implied a legal status or institutional existence on the part of the conferences. All agreed that they were not to claim nor to exercise any legal authority whatever. In the language of the permanent secretary, "The sole power of the House of Governors is as a mighty moral influence, as a focusing point for public opinion, and as a body equal to opportunity of transforming public opinion into public sentiment, and inspiring legislators to crystallize this sentiment into needed laws."

There can be no doubt that this movement has the potentiality of great usefulness. It should serve as a new bond of union among the states. It should remove many of the misunderstandings which are constantly springing up between different sections of the country. It should prevent any state from being or feeling isolated. It should facilitate the transaction of official business between the commonwealths. And, with a permanent secretary and various committees to deal with important topics, the association of governors may maintain continuous activity throughout the year.

LEGAL EDUCATION AND ADMISSION TO THE BAR

This subject has engaged the serious attention of laymen as well as lawyers, but no action of importance has been taken during the year. In all sections of the country, however, the demand is growing ever louder for a more thorough training on the part of applicants for admission to the bar. The tendency of law schools is to increase the requirements for entrance, and to make examinations more thorough. On the part of lawyers' associations, there is a growing disposition to insist on a longer novitiate for those seeking to enter the profession, and a thorough weeding out from their ranks of the morally unfit. The waiting attitude of the bench, the bar, and the legislature on this topic, was reflected in the preliminary report of the committee on standard rules for admission to the bar, submitted at the last meeting of the American Bar Association. In substance the committee asked to be continued with directions to prosecute the work, begun by it, of securing the opinions of bar associations, of state boards of bar examiners, and of legal educators, as a basis for rules which should fully represent the consensus of the profession on the subject.

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VI. POPULAR GOVERNMENT AND CURRENT POLITICS

ARTHUR N. HOLCOMBE

Progress toward a Popular Type of Government.—The past year has witnessed notable advance toward a more popular type of government, both in the Federal Government and in the states. In Congress the progress of democratic principles has been signalized by the restriction of the arbitrary power of the Speaker and the reorganization of the Committee on Rules; in the states, by the further development of the system of nominating to public office by direct vote of the people, and by the growing tendency to experiments of the kind that have come to be best known by the work of the People's Power League of the State of Oregon. Both representative and party government of the traditional American type are being subjected to a thorough overhauling. The result may be a material modification of the government of our states.

Within the year several highly suggestive books have appeared which have greatly stimulated the spirit of change. Among these are Herbert Croly, *The Promise of American Life;* William Allen White, *The Old Order Changeth;* Judge Ben B. Lindsey, *The Beast and the Jungle*, and Franklin Hichborn, *Story of the California Legislature of 1909.*

The Speakership and the Committee on Rules.—The whole history of the House of Representatives, from an institutional point of view, down to March 19, 1910, was the history of the concentration of legislative power in the hands of the Speaker of the House. The result of the long process of concentration was to raise the Speaker to the position of leader of his party in the House. Since the retirement of Thaddeus Stevens, the Republican leader at the close of the Civil War, the most powerful figures in Congress have been Blaine, Randall, Carlisle, Reed, Crisp, and Cannon, Speakers of the House. Under Joseph G. Cannon the power of the Speaker was greater than ever before. His control of the majority party and through the party of the House, was more absolute than that of any of his predecessors. Speaker Cannon's authority rested upon four things: (1) the power of recognition; (2) the power to rule on parliamentary procedure; (3) the power of appointment of committees; and (4) the power to control the action of the committee on rules. By the arbitrary exercise of the power of recognition, any Speaker could pocket an individual member of his party who refused to acknowledge the Speaker's leadership. By his rulings, the Speaker might block or advance pending legislation. By the arbitrary exercise of the power of appointment, he could inter recalcitrant Congressmen in unimportant committees and so constitute the important committees as to control their action upon the legislation that would emanate from them. By the exercise of his controlling power in the all-important Committee on Rules, he could effectually control the passage of all legislation through the House. The Committee on Rules consisted of five members, two from the minority party, and two from the majority, plus the Speaker. In practice, both minority and majority placed their most conspicuous leaders on the committee, but the three majority party members never consulted the minority, except upon minor points, concerning the introduction of special rules to guide party legislation through the House.

Speaker Cannon was accused by a minority of the Republican Party of abusing his autocratic powers for the exclusive benefit of the majority of the party and to the great detriment of the interests of the minority. They desired such a reformation of the rules of the House as would make a Speaker a servant rather than a master of his party. With this object in view they advocated two fundamental changes: (1) The transfer from the Speaker to the Committee on Rules of the control of the House; (2) the reorganization of the Committee on Rules on a more representative basis. The motion for the reorganization of the rules committee, as originally introduced by Representative Norris (March 17, 1910), provided for a committee of fifteen, nine to be elected by the majority party, six by the minority. For the purpose of electing the committee, the majority party members of the House were to be divided into nine groups, as nearly equal in numbers as possible, each group containing all the members from a single section of the country. Each group was then to meet in a separate caucus and select one of its number to go on the Committee on Rules. The minority party members were to be divided into six groups, which should proceed in a similar manner to the selection of the six minority representatives on the Committee on Rules. The division of the members into groups was to be made by a committee of three, elected by the House for the express purpose. Thus all parts of the country would be fairly represented in the reorganized committee by a member of each party.

This proposal for a large and representative committee on rules further provided that the committee should choose its own chairman and that the Speaker should not be a member. Thus the Speaker's control of the committee on rules was to be terminated. Finally, in order to complete the dethronement of the Speaker and establish the government of the House on a democratic basis, it was planned that the reorganized committee on rules should eventually succeed to the Speaker's power of appointment and itself select the other committees of the House.

This plan, if carried out, would have effectually deprived the Speaker of his power as a political leader, and reduced him to the position of a nonpartisan presiding officer. Legislative power would still have been concentrated, but in the hands of a representative party committee instead of in those of a single individual. There would still have been responsibility for legislation, which was the chief advantage of the concentration of power in the hands of the Speaker; but it would have been responsibility not to the caucus majority of the dominant party, but to a casual majority of the sectional groups. Speaker Cannon had been in the view of his opponents a benevolent despot, imposed upon Congress for two years by the majority of the Republican caucus. The proposed committee on rules would have been a heterogeneous body of men, which might or might not have obeyed the caucus resolutions of the majority party. If the majority of the reorganized committee should be in harmony with the majority in the caucus of the dominant party, effective responsibility for legislation could be maintained. But if a faction within the dominant party were enabled through the establishment of a sectional committee on rules to hold the balance of power in the committee, responsible party government would be at an end. Speaker Cannon uttered a sound political maxim when he observed in his famous closing speech on March 19, 1910: "The Speaker does now believe, and always has believed, that this is a government through parties, and that parties can act only through majorities." Norris's plan for the reorganization of the rules committee, in its original form, would have had a tendency to destroy the unity of party, and consequently to impair the efficiency of party government.

Between the first introduction and the final moving of the Norris amendment to the rules, its author was induced (whether by the regular Republican leaders or by his Democratic allies does not appear from the record) to alter his resolution. In the form in which it was adopted (March 19, 1910), it provided for a committee of ten, six to be selected by the majority party and four by the minority. (See VII, *The Speakership.*) Besides the reduction in size, the provision for the sectional constitution of the committee was eliminated. The result was the choice of the six Republican members by a plurality vote in the Republican caucus, and of the four Democratic members by a similar vote in the Democratic caucus. There was no representation of minorities within the ranks of a single party. The Speakership was stripped of a portion of its power, but the two-party system of government was maintained in all its traditional vigor. Henceforth, so long as these rules are in force, a Speaker will be a servant instead of a master of his party; but a discontented minority within a party must still choose between abiding by the decision of the majority in the party caucus, or going over to the opposition.

Popular Election of United States Senators.—For many years the direct election of United States senators by the people has been a much-discussed question. At various times the legislatures of most of the states have recommended a constitutional amendment to secure the popular election of senators. (See V, *Law and Jurisprudence.*) In recent years, however, a means of accomplishing the popular election of United States senators without a constitutional amendment has been discovered. This is the so-called Oregon plan,[1] originally adopted in that state in 1904; also adopted in 1909 in Nebraska and Nevada. (Nebraska had already established the direct nomination of candidates for United States senator in 1907.) The plan requires the nomination of party candidates for senator at a direct primary election. At the same primary candidates for nomination for the state legislature are given the option of placing either of the following statements after their names on the primary election ballot: (1) promise to vote for people's choice of United States senator; or (2) will not promise to vote for people's choice of United States senator. At the ensuing general election the people indicate their choice in the same way that they choose a governor, and the legislature chosen at the same time will naturally be pledged to ratify the people's choice. In Oregon, at the election of 1908, a majority of the Republican legislature was so pledged and elected Gov. Chamberlain, the candidate who had a majority of the popular vote, although a Democrat. A special statute in that state, passed in the same year through the initiative and referendum, expressly instructed the legislature to ratify the people's choice, but, in fact, only those Republican legislators who had given the pledge actually voted for the Democrat whom the people had selected.

As yet no other states have adopted the Oregon plan, but a large number have introduced the popular nomination of candidates for United States senator in state-wide direct primaries. This is the practice either by statute or by party rules in all the southern states except North Carolina, and by 1908 had been introduced by statute into eleven northern and western states, beginning with Wisconsin in 1903. The other states are Oregon (1904), Nebraska (1907), Iowa (1907), Washington (1907), North Dakota (1907), South Dakota (1907), Kansas (1908), New Jersey (1908), Ohio (1908), and Oklahoma (1908). In some of these states the candidate may pledge himself to vote for the *party* candidate for senator. But in New Jersey in 1910 the retiring senator refused to submit his name to the party voters at the primaries, evidently relying upon his control of the organization in the party to secure his reelection without the approval of the rank and file of the party. The advisory vote on United States senators was introduced in 1909, as a part of the enactment of direct primary laws in four northern and western states —California, Idaho, Michigan, and Nevada. Illinois followed in 1910, replacing a statute which had been declared unconstitutional; hence there are now sixteen northern states in which the people select the party candidates for United States senator, and in three of these they practically elect the senator.

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[1] An excellent description of the Oregon plan and its operation in the case of the election of a Democrat, Gov. Chamberlain, by a Republican legislature (1909) may be found in a speech delivered by Senator Bourne of Oregon, in the United States Senate on May 5, 1910. See *Congressional Record*, May 6, 1910.

In California the statute provides that a candidate for the state legislature may have the alternatives of pledging himself to vote, if elected, for the favorite candidate in his district, or for the candidate who shall have received the indorsement of his party at the primary election in the greatest number of districts electing members of the party to the legislature. The political explanation of this novel feature appears in Franklin Hichborn's vivid *Story of the California Legislature of 1909*. In general the recent statutes for the direct nomination of United States senators contain no such " jokers " as this California statute, and the movement marks a genuine advance toward more popular government. The usefulness of such statutes was clearly revealed in the primaries of 1910, when, in more than one state, discredited party leaders were retired from the senate without the necessity of defeating the party's legislative ticket.

Direct Nominations. — The most striking tendency in the evolution of popular government is the progress of the movement for the nomination of candidates for elective office by direct vote. During the legislative sessions of 1909 and 1910 important legislation concerning direct nominations was enacted in an even dozen of states; in others direct primary bills were among the leading local issues, and in still others a number of less important measures in relation to the nominating system were placed upon the statute books.

State Laws.—In Arkansas in 1909 the primaries were legalized, that is, primary elections were surrounded with all the safeguards intended to preserve the purity of the ballot at general elections; but the law did not attempt to interfere with the private organization of party committees or with the party rules for the nomination of candidates. In Maryland the law of 1910 provides for the choice of candidates at direct primaries for public office in Baltimore, and for all state offices except those for which nominations are to be made in the state convention, as well as for the selection of delegates to city, county and state conventions. Candidates for offices to be voted for throughout the state are still to be named in the state convention. There is no provision for the enrollment of party members, a simple declaration of intention to support the ticket at the next election entitling the voter to participate in the primary of his choice.

In Massachusetts a further step in the introduction of direct nominations was taken by an act passed in 1910 which provides that on petition of ten per cent of the voters in any state, representative or senatorial district a vote shall be taken at the next general election to decide whether or not the party candidates for state representative or senator from the district shall be nominated by direct plurality vote. At the general election in November this act was accepted by the voters in three senatorial and twelve state representative districts. In Connecticut, provision was made for party registration and the use of the official party lists was made mandatory in all caucuses and primaries.

In eight of the states, state-wide direct primary laws were passed covering all state offices, and in six cases United States Senators as well. In one of these, Illinois, the act of 1910 constitutes the fourth attempt on the part of the Legislature to avoid the constitutional difficulties in the way of direct primaries created by three successive decisions of the state Supreme Court. In another, Tennessee, the act of 1909 makes mandatory upon both parties the direct nominating system which was already optional by law and, in fact, the practice under the party rules of the more important of the two leading parties. The other six states, Arizona, California, Idaho, Michigan, Nevada, and New Hampshire, are new accessions to the ranks of the state-wide direct nominations states. The Michigan law may also be extended to candidates for municipal office in cities with more than 70,000 inhabitants.

At the present time candidates for state office and for United States Senator are nominated directly by the people throughout the " solid South," except North Carolina. The practice is required by mandatory statutes in Texas, Louisiana, Mississippi, and Tennessee; is established in the dominant party by optional statutes in Kentucky, Alabama, and Florida; and in the others is enforced so far as the Democrats are concerned by party rules. West of the Mississippi, mandatory laws covering all state offices exist in every state except Colorado, Utah, Wyoming, Montana, and Minnesota. In Minnesota, however, there is a mandatory law covering all offices except those voted for in the state at large.

East of the Mississippi similar laws exist in Ohio, Pennsylvania, and Maryland; and mandatory laws applying only to certain localities exist in Indiana, New Jersey, and Massachusetts. Mandatory state-wide laws applying to all offices exist in Wisconsin, Michigan, Illinois, and New Hampshire.

In New York a radical and comprehensive direct nominations bill was the leading issue in the Legislature of 1909. Optional systems of direct nominations applying only to certain offices or localities exist in Maine, Massachusetts, Rhode Island, Connecticut, New York, Indiana, and Delaware. Only the four Rocky Mountain states mentioned above, West Virginia, and Vermont, remain wholly outside of the general movement toward direct nominations.

Tendency of Primary Legislation.—In general, the latest statutes for the establishment of mandatory state-wide direct primaries follow in the path marked out by the earlier legislation. Provision is made for the nomination of candidates by a direct vote of the party members, for the formulation of the party platform, and for the organization of the party committees. In various details, however, the newer statutes differ among themselves and from the earlier legislation. They reveal that there are still a number of disputed points in primary election legislation. The most important of these are: (1) the date of the primary; (2) the majority required for nomination; (3) the requirements for the insertion of names on the primary ballot; (4) the construction of the platform; and (5) the organization of the party committees. Upon a number of points, however, there seems to be a tendency toward greater uniformity.

First, the test of party affiliation is being settled on the basis of the declaration of the voter at the time of registration, subject to later change upon notice to the primary election commissioners prior to primary day. So by the new enrollment act in Connecticut; but the Illinois statute provides that a voter in the primary of any party must not have voted in the primary of any other party within two years, a restriction upon the freedom of choice of party affiliation which is contrary to recent practice. In Maryland electors must declare their intention to support the party at the next general election. In Michigan voters declining to divulge their party affiliation are registered as independent.

Secondly, the test for the application of the mandatory primary to political parties is being made more inclusive. The Illinois statute extends the scope of the act to all parties polling at least two per cent of the total vote for governor in the last preceding general election. In Maryland, however, it is ten per cent.

A third tendency is to extend the application of laws regulating the collection and expenditure of campaign funds to the primary as rigorously as to the general election. Such is the intent of the California, Connecticut, Florida, and Wyoming statutes.

Finally, all the recent statutes provide that the primaries of all parties shall be held on the same day and at the same place. This universal tendency toward the adoption of joint primaries denotes the general abandonment of the older notion, that a primary is the private affair of a single party, for the more modern notion that the nomination of suitable candidates for public office is as much the concern of the public as their subsequent election. The effect is to assimilate primary day, both in the mode of its management and in the attitude of the public toward it, more and more to general election day.

Date of Primary.—This tendency is revealed not only in the provisions of recent primary legislation bearing on the more important features of primary elections, but also in relation to many of the details. For example, attempts to make the same registration period serve for both primary and general election have generally been abandoned. Experience has shown that if the primary is held on the main registration day there is no adequate opportunity to purge the lists of improperly recorded names, and that provision for registration between primary day and general election day can best be made by opening a supplementary list. This is especially important in those states in which the primary is separated from the general election by a comparatively long interval.

The date of the primary election is fixed on a Tuesday at the end of Aug. or early in Sept. in the primary legislation of six of the Northern states which have recently passed state-wide acts, and at the second Saturday in April in Tennessee. Illinois also provides for holding primaries in April of each even year after 1910. In placing the date in the spring, Tennessee simply gave effect to the prevailing practice in the Southern states generally under the rules of the Democratic party organizations. For reasons peculiar to the South, the earlier date is preferred there. Elsewhere the disadvantages of a long delay between the selection of candidates and the general election and final induction into office of the successful candidate are felt to outweigh any advantage that may be gained by the intervention of a long period prior to the general election, in which factional disputes within the party may be conciliated. Certainly, the shorter the period between the selection of candidates and the beginning of the term of the office for which they are running, the greater the feeling of responsibility of the elected official to the people. Representative government on a truly popular basis is generally felt to be endangered unless the representatives are in a position to execute the will of the electors while the issues on which they were chosen are still alive.

Majorities and Pluralities. — The general tendency in recent primary legislation with regard to the majority required for nomination, is to give the nomination to the candidate polling the greatest number of votes. Nomination by a bare plurality, however, is unsatisfactory when there is a large field of candidates, inasmuch as an unpopular minority of a party may secure the choice of their candidate through the scattering of the votes of the majority among several more popular aspirants for a party nomination. In any event, there is no security that the successful aspirant at the primary really is the man most satisfactory to a majority of the party.

Until 1909 only two methods of meeting this problem had been tried, the second ballot and the minimum percentage plan. In most of the Southern States an absolute majority is required for a nomination. This is provided by the rules of the dominant (Democratic) party in some states, and by law in others (Florida, Mississippi, Texas, North Carolina, Louisiana, Georgia, and Tennessee). If none of the candidates receive a clear majority a second ballot or primary is held to decide between the two highest. Outside of the South no state has hitherto demanded a clear majority to nominate; but four (Iowa, Michigan, South Dakota, and Washington) have guarded against nomination by too small a minority by requiring a minimum percentage (varying from 25 to 40) of the total vote cast for all candidates for a given nomination. In Michigan this feature of the primary law applied only to two minor offices, and was repealed in 1909. The South Dakota statute was also repealed in 1909, leaving in force only the Iowa and Washington laws, of which only the Iowa law applies to all offices. Hence, throughout practically the entire North and West primary nomination by a mere plurality vote is the rule, with, however (since 1909), one notable exception.

Preferential Voting. — The Idaho law of 1909, in order to insure a popular choice, provides for preferential voting at primary elections. The ballot is so arranged that the voter may indicate his first and second choices. If no candidate receives a majority of the first choices, that candidate receiving the greatest number of first and second choice votes is the regular nominee. No voter may cast both his votes for the same candidate, nor is he compelled to indicate more than his first choice. This is an innovation in American primary legislation, although in several states preferential voting in another form has been proposed, notably in Wisconsin (the so-called "Mary Ann law"). The Wisconsin Republican state platform for 1910 demands the use of second choice ballots in the primaries. The Wisconsin plan is to count the second choices, in case no candidate receives a majority of the first choices, by the Ware method; that is, the lowest candidate is eliminated from the contest, and the ballots originally cast for him are distributed among the other candidates according to the second choices of those voters as indicated on the ballots. The process of elimination and redistribution is continued until some candidate has a majority of all the votes, or until only one candidate remains. The Wisconsin plan possesses the advantage over the Idaho plan that second choice votes cannot be used to defeat the voters' first choice so long as the latter stands any chance of nomination.

In Illinois three earlier direct nomination acts were declared unconstitutional by the state supreme court on the ground that they violated the provisions of the state constitution. The state constitution requires that representatives in the lower house of the legislature be chosen in three-member districts, in which each voter has three votes and may distribute them as he will among the candidates. The effect is to insure one representative to the minority party in each district where it can muster one third of the vote. The Illinois primary legislation of 1910 provides for a similar system of minority representation in the primaries for the choice of the three candidates in each district for the lower house of the legislature, and for choice of the party committees for the state senatorial districts. In this instance minority representation was not adopted from a conviction of its utility, but from necessity. As a method of proportional representation, the device is of little consequence, and in practice will have precisely the opposite effect to that sought by the establishment of direct primaries. Instead of facilitating it obstructs the choice of candidates acceptable to the majority of the party. It is, consequently, inconsistent with the principle of partisan primaries. The result will be to put a premium upon factional activity within the parties and to impede the operation of government by party. If national party distinctions were just now significant in Illinois state politics, this feature of the recent primary legislation would be a more serious defect than is actually likely to be the case.

Nomination Fees and Petitions.—Several of the earlier direct primary laws were severely criticised on the ground that the requirements for the insertion of names on the primary ballot were undemocratic. These requirements were twofold: (1) that the candidate for a nomination secure a certain number of signatures to a petition for the printing of his name on the party ballot; and (2) that he pay to the state a fee. The size of the petition or fee corresponded to the importance of the office. It was felt that these requirements, especially that of the fee, were sometimes too onerous and had the effect of depriving poor candidates of the right of running for office. In the recent statutes there appears some recognition of the justice of this criticism. In Arizona, Nevada, and California both fees and nomination petitions are required. The fees are graduated, and in Arizona vary from five to twenty-five dollars. In New Hampshire they are higher. In Illinois and Michigan there are no fees, the whole cost of the primary election being assumed by the state, and in Idaho fees exist simply as an alternative to petitions. In New Hampshire there is no provision for petitions except as an alternative to the primary election itself, and the number of signatures required is accordingly high. Elsewhere the requirements are relatively low. Michigan requires that the petitions bear the names of from two to four per cent of the party voters, according to the importance of the office; the other states in general content themselves with less. In Illinois candidates for the nomination for governor must collect from one to two thousand names; for United States senator, from three to five thousand names; in California, for United States senator, one per cent of the party vote in at least ten counties; but for less important offices Illinois requires only one half of one per cent of the party vote. In Illinois the test of the party vote is the vote cast for secretary of state at the last election; so also in Michigan; but in California the test for the purposes of senatorial petitions is the highest vote for a presidential elector. In Arizona and Nevada the percentage required varies from one per cent in the case of a congressman to ten per cent in the case of a precinct committeeman.

The objection is often made that the requirement of a large number of signatures to a petition has much the same effect as the exaction of a heavy fee in discouraging poor candidates, without diminishing the expense of the primary to the state, and that the more rational plan would be to abandon the attempt to restrict the number of aspirants for party nominations, and to substitute for it some scheme for preferential voting in the primaries such as the Idaho or Wisconsin plans. It is not yet possible to discover any decided tendency to imitate the Idaho experiment; but it is already certain that there is a growing demand that the primary shall be supported entirely at the public expense, like the general election. Several of the state platforms in 1910 contain such demands. As this is a matter in which the politicians have a direct interest in giving effect to the popular desire, there is every prospect that the tendency will persist toward the assumption by the state of all the expenses of primary elections.

CONVENTIONS AND PLATFORMS

The mode of framing the party platform for the candidates selected in direct primaries is not yet agreed upon. The difficulty arises from the fact that under the direct primary system the candidate is forced to indicate his platform in advance when he first announces his intention to solicit a nomination. The candidates are selected first, and the party profession of faith must be formulated afterwards, instead of both candidate and platform owing their existence to the action of the same body, as under the convention system. For a single definite statement of the party policy is substituted a multitude of personal manifestoes. Instead of owing the nomination to the party, the candidate owes it to a personal following or to a faction within the party. This is necessary, if parties are to be managed upon a democratic basis; but it results in impairing the capacity of the party to agree upon a working program in case of victory at the general election. Unless some mode of welding the various individual programs into one homogeneous party program is devised, orderly party government must ultimately give place to factional anarchy.

Various attempts to get over the difficulty have been made. In New Hampshire, the recent law provides for the retention of the convention for the purpose of framing the state platform. This convention, which met for the first time in Sept., 1910, comprised all the successful aspirants for party nominations at the primaries, plus a large number of specially elected delegates. It had been feared in some quarters that the conventions would be a fizzle on account of (1) the previous completion in the primaries of the more exciting task of making nominations, and (2) the survival of factional grievances and personal jealousies from the primary campaign. In fact this was not true of New Hampshire. The Republican state convention was attended by 607 out of the full complement of 820 delegates; the Democratic by 586 out of 761. In each convention the platform was practically nothing more than a restatement of the issues on which the gubernatorial nominees had fought their primary campaigns. The convention proceedings were cut-and-dried, and there was little to attract men of the highest ability, unless actually candidates for high office. Yet their proceedings attracted as much attention as ever from the public and the newspapers. The conventions were chiefly useful as well-advertised rallies, at which the opening guns in the ensuing campaign could be fired and the feelings of the party workers wrought up to fighting pitch. In each party the convention, stripped of the most important of its former powers, proved a more valuable harmonizing influence than had ordinarily been the case when it had the power of selecting the candidates.

Abolition of the Convention.—In the western states the tendency seems to be to abolish the convention altogether, intrusting the task of framing the party platform either to a special meeting of the candidates or to a party council composed of the state central committee with or without the addition of a few other conspicuous party leaders. The latter is the method adopted in the recent Illinois, Arizona, and Nevada statutes; but in California provision is made for the retention of the old type of convention for the purpose of platform-making. The objection to the Illinois plan is that it takes the power to frame the platform out of the hands of the direct representatives of the people who will ultimately have to execute the platform resolutions, and puts the power in the hands of a body that should be the servant of the candidates, not their master. The device is defended by its advocates on the ground that the state central committee will owe its powers to the same body of voters who have selected the candidates and consequently can be trusted to exercise them in conformity to the prevailing sentiments of the party membership. Since the committeemen will not be bound by such primary manifestoes as are issued by the candidates and will have no such direct personal interest in the formulation of the leading issues for the campaign, they will be in a better position to draw up a platform upon which all party candidates can conscientiously stand. Only experience can tell which theory is most in accord with human nature.

REFORM OF PARTY ORGANIZATIONS

The most vexed question of all is that of the reform of party organization. The chief purpose of direct primaries is to make the expression of the popular will more accurate and more effective. One of the greatest obstacles in the way of the choice of really representative candidates has been the irresponsibility of the party managers. Hence an important feature of all recent direct primary legislation has been the attempt to reconstruct party organizations on a democratic basis.

In New Hampshire the basis of party organization is the annual state convention. This is composed of all the candidates of the party nominated at the primaries plus an equal number of delegates chosen at the same time. The convention meets in the latter part of Sept. shortly after the primaries, and proceeds first to the adoption of the platform and then to the choice of the state committee. The state committee is chosen by the county delegations, each voting independently, and the state committeemen from each county compose the several county committees. The Republican state committee chosen in 1910 contained 130 members, apportioned among the ten counties of the state by the convention roughly in proportion to the population. The Democratic state committee contained 99 members, similarly apportioned.

In Michigan only the delegates to the county conventions are chosen by the voters directly, and the county convention is accordingly made the unit of party organization. The county convention elects the county committee and the delegates to the state convention. The county committee in one or more counties constitutes the congressional, state, senatorial, and state representative committees for the corresponding electoral districts. Both county and state conventions are to be called by the state central committee to meet within a prescribed interval after the primary. The number of delegates to the state convention to be chosen by each county convention is to be based upon the vote within the county for the party candidate for Secretary of State at the last preceding general election. To the state convention is intrusted the task of making nominations for state offices other than governor and lieutenant governor, of choosing the state central committee, and of drawing up the platform.

In four other states, Arizona, Illinois, Nevada, and Idaho, all the party officers are chosen directly by the party voters at the same time the candidates are nominated. Thus the Illinois statute provides for the organization of state central, congressional, county, city, and precinct committees. The state central committee is composed of one member from each congressional district, elected biennially at the direct primary. The precinct committee is composed of one member from each precinct, elected for the same term. The city and county committees are composed of the precinct committeemen within the city and county respectively. The chairmen of the county committees in each congressional district constitute the congressional committee for the district. Each committee has the usual powers of such a committee and is expressly forbidden to delegate them. The county committee of each county must meet at the county seat shortly after the primary and elect its chairman. That meeting is called the county convention, and it chooses delegates to the congressional district and state conventions. The congressional district convention chooses district delegates to the national convention of the party in presidential years and recommends names to the state convention for nomination from the district for presidential elector. The state convention meets on the first Friday following the first Monday after the April primary and nominates candidates for presidential elector, elects the delegates at large to the national convention, nominates candidates for trustee of the state university, and adopts the party platform. In the other states, the date of the state convention is different, but the procedure is much the same.

Effect on Party Organization.—The effect of these laws is to reestablish the party organizations on a popular basis. The evils of the former convention system or indirect selection of party candidates and officers were summarized by Gov. Hughes, of New York, in one of his annual messages to the legislature, as follows: (1) the creation of irresponsible party leadership; (2) the discouragement of the voters from participation in the affairs of the party; (3) recognition by candidates of responsibility not to their constituents nor even to the voters of their party but to the leaders to whom they realize that they owe their offices; and (4) political domination by special interests through the control of party organizations. The substitution of direct for indirect selection of the party candidates and leaders is calculated to diminish the first three of these evils. The experience of the pioneer states in direct primary legislation already shows that.

But it is not certain that such a form of party organization as has been adopted in these states is likely to give the most accurate expression to the popular will. The difficulty lies in the creation of party committees, which are independent of the party candidates to promote whose election they are presumably called into existence. The party committee can only serve the party by serving the candidates whom the party has nominated. But under the direct nominations system, the party officers owe their positions to the same power that nominates the candidates, the votes of the party members. If the committees are coördinate with the candidates in authority, they are not the servants of the candidates. Factional contests at the primaries may result in the choice of committees which are not in sympathy with the candidates and which will not be effective instruments for executing the will of the majority of the party. There are two ways of preserving harmony within the organization. One is to empower the candidates to select their own campaign committees, the other is to empower the committees to select their own candidates.

In New York.—Neither of these plans has ever been tried in any American state. The former has not even been seriously contemplated. The latter has recently been hotly debated in New York. The so-called Green-Hinman bill, inspired by former Gov. Hughes, was first introduced into the legislature in the session of 1909, and failing of passage was again introduced at the regular session of 1910, and finally in a modified form at the special session, which met in July. Despite the advocacy of Gov. Hughes and of former Pres. Roosevelt, the bill was defeated by the efforts of the politicians of both parties. Nevertheless, the bill represents so radical and bold an attempt to reform party organization that no account of popular government and contemporary politics would be complete which neglected to give it consideration.

First, all the members of the regular political committees, whether or not they wished to take advantage of the provisions shortly to be described relating to the designation of party candidates for office, were to be elected directly by the members of their respective parties. The state committee was to be composed of one member from each assembly district; the county committee, except in New York, of one member from each ward or election district; the assembly district committee, of one member from each election district. These were the chief committees, the others being formed from these. The members were to have a voting-power in the committees proportioned to the latest party vote for governor cast in their respective districts. This provision for true party representation in political committees was important, especially as the task of drawing up the platform was to be intrusted to a party council in which state committeemen were to play a conspicuous part. This party council was to be composed of the state committee, with or without the addition of the chairmen of the county committees, according to the rules to be laid down by the state committee itself, plus the party candidates for state officers to be voted for in the state at large and for state senator and member of the assembly. This party council would be much like the state convention established by the recent New Hampshire statute, but by the Green-Hinman bill the candidates would have possessed a greater influence in the convention. The state committee would have been too large for effective administrative work, and doubtless would have been expected to organize by the selection of an executive committee.

The most important feature of the Green-Hinman bill was the provision for the designation of candidates by the party committees. Each party committee was empowered to designate a slate of candidates for all offices within its jurisdiction to be nominated at the primary. The committees were to publish their designations at least seven weeks before the primaries. Additional designations could then be made by petition on the part of specified numbers of party members at least four weeks before the primary. The bill specifically provided that all nominations for places upon the committees themselves should be made by petition. The voters were thus enabled to reëlect or supplant their party committees freely and at the same time to ratify or repudiate their designations for the party nominations. The effect would have been to concentrate the power to nominate in the committees, and to enforce their responsibility to the rank and file of the party by the submission of their slates to the latter at the primary for indorsement or condemnation. In the former event there would be an excellent prospect of the most harmonious coöperation between political committees and candidates; in the latter, the committee making an unsatisfactory slate would almost certainly be replaced by one in full sympathy with the successful candidates at the primary. This plan seems the most promising of all the recent attempts at the reform of party organization. But the whole movement must still be regarded as in an evolutionary state.

DEFECTS OF DIRECT NOMINATIONS

The least satisfactory feature of recent primary legislation is the compulsory enrollment of voters in party organizations as a condition of participation in the primary. In the earlier years of the direct primary movement the laws of several states were declared unconstitutional on the ground that the requirement of a declaration of party faith from the voter was an improper impairment of his liberty. Unless the primary were an election, the legislatures, so these courts declared, could not interfere with it at all. If it were an election the legislature could not place any conditions upon the participation of the voters in it. This position has been gradually abandoned by the courts, but many citizens still feel that the enrollment of voters in parties for the purpose of participation in the primaries will result in giving to present party divisions an artificial and excessive rigidity.

The nomination by the majority party thus tends to become the object of political activity, just as is the case throughout the greater portion of the South to-day, and the usefulness of party as an instrument for the selection of candidates and the formulation of issues, especially in federal elections, will be seriously impaired.

If party affiliations were prompted by pure reason alone, party enrollment would constitute a less serious barrier to the transfer of the voter's political allegiance in consequence of altered convictions, but party affiliations are often dictated more by instincts and impulses than by reason, and require no artificial stiffening. The original organization of a party may be due to a deliberate intellectual process, but when a party has once come into existence its perpetuation depends upon the facts of human nature, of which deliberate thought is only one. (See the book by Graham Wallas: *Human Nature in Politics.*) The tendency of party enrollment is to fossilize the party, and to perpetuate meaningless party divisions.

SEPARATION OF STATE AND FEDERAL ISSUES

One of the chief advantages of the American federal system of government lies in the opportunity it affords for the separation of state and federal issues. Where the two classes of issues are clearly separated, it becomes possible for the voters to give their representatives two mandates to determine two contests at the same time, one on a federal issue and one on a state issue. One great merit of direct nominations is that it facilitates the separation of federal and state issues, by enabling the voters to express their will clearly. But if the condition for the participation of the voter in the nomination of state officers depends upon his professing allegiance to a certain policy in federal politics, this merit of the direct primary is lost. By encouraging the separate alignment of voters in state and in federal primary elections, the development of direct nominations would just double the efficiency of the representative system of government. No state, however, has yet discussed a direct nominations system by which the voter can help one party to choose its candidates for federal office, and another party its candidates for state office.

The value of separating the political issues of different political authorities has been recognized by those reformers who have tried to establish nonpartisanship in municipal politics. Thus the abolition of the direct primary by the charter adopted in Boston in Nov., 1909, was intended to facilitate the separation of municipal issues from state and national issues. In Boston the means adopted, nomination by the petition of five thousand voters, was unfortunate and resulted in the organization of a self-constituted committee of local politicians to decide who should be nominated to oppose the former Democratic mayor. This committee had no means of enforcing its selection upon the voters who were opposed to machine rule, and the campaign was a failure. In fact, where the wishes of large bodies of voters are to be considered, there must be organization in order that the voters' wishes may be made effective. The mistake of the Boston reformers consisted in trying to abolish *all* party divisions in municipal politics. Their object should have been to abolish party divisions at the municipal primaries along state and national party lines. What is wanted in municipal elections instead of the traditional party divisions is not nonpartisanship, but municipal partisanship.

FOREIGN ELECTORAL REFORMS

The experiment of direct primaries has not yet been conducted for a sufficiently long period to warrant any definite conclusions as to their future. We know already that direct nominations have made our elections more costly, and that they have stimulated the voters to a more discriminating choice of their representatives. Except for the requirement of party enrollment, a direct primary is in all important respects a preliminary general election. If party enrollment were omitted, the efficiency of the electoral process as a means of reflecting public opinion would be increased. It is suggestive, however, that just as Americans are approaching the introduction of a second election, in order to secure a more accurate choice of representatives, those foreign countries which have long enjoyed the use of the second ballot are considering its abandonment. A majority of the French chamber of deputies elected in May, 1910, are pledged to abolish the so-called *ballotage* and substitute for it some form of proportional representation. This substitution has already been made in some of the states of the German Empire, notably in Würtemberg. In Sweden, when a popular legislature was established in 1907, proportional representation was preferred to the second ballot. In England a royal commission recently appointed to inquire into electoral systems reported in favor of that system of preferential voting known as the single transferable vote, and against the second ballot. In the language of American politics, this report opposes the adoption of direct primaries in any form and advocates instead the adoption of preferential voting at the general election. If the states of the Union are to adhere to an electoral system based on single electoral districts, they will probably be compelled eventually to introduce the transferable vote at least into their primary system.

CORRUPT PRACTICES ACTS

Publicity of Expenses.—The movement for greater publicity in the financing of primary and general election campaigns has made progress. The legislatures of Connecticut and Kansas at the sessions of 1909 provided for the publication of receipts and expenditures after the election. The Kansas statute applies to political committees supporting or opposing any candidate or party. The Connecticut statute requires each candidate to appoint an election agent, and to pay to him all moneys to be used for the campaign beginning six months before the day of the election. The legitimate objects of expenditure are enumerated in the act, and all others are forbidden, as are contributions from any corporation. A preliminary statement must be filed within fifteen days after the primary. In 1909 statutes providing for publication of detailed statements of expenditures after the primaries were passed in Arkansas and Idaho. Florida (1909) went one step further and required preliminary publication of expenses not less than ten days before the primary, to be followed by a complete statement within ten days after the primary. These statements must include also the names of all contributors to the campaign funds of the candidates, and their relationship to the candidates, whether by blood, marriage, business, politics, or otherwise. These statutes are in line with the recent tendency to make the regulation of campaign finance more stringent, but it is not yet certain that they can be satisfactorily enforced.

Statutes attempting to regulate not only the nature, but also the amount of political expenditures in the primaries have recently been passed on the Pacific Coast. The California statute of 1909, which seems to have been suggested by the Oregon statute of the preceding year, provides that no candidate for an elective office shall spend for the purpose of securing a nomination a sum in excess of a sum to be determined as follows: When the total vote within the district at the last general election did not exceed 5,000, $250; for each 100 voters over 5,000 and not over 25,000, $2;

for each 100 voters over 25,000 and not over 50,000, $1; and for each 100 voters over 50,000, fifty cents. No certification of nomination shall be issued until a statement of expenses has been filed.

The Oregon statute differs from the California in adopting another basis for the calculation of the legitimate expenditure. In Oregon no candidate for a nomination may spend more than fifteen per cent of the annual salary of the office he seeks, and no candidate for election more than ten per cent. However, no candidate is restricted to less than $100 at either primary or general election, and the expense of advertising in the state publicity pamphlet is excluded from the calculation.

Public Information for Voters.—In Oregon the state undertakes not only to regulate the amount of expenditure by candidates for public office but also to assist them in the work of explaining their cause to the voters. The state publicity pamphlet was originally established in 1907 for the purpose of distributing to the voters correct copies of all measures referred to the people by the legislature, or by a referendum petition of the people, or proposed by initiative petitions, together with the arguments filed, favoring or opposing any of the measures.

The application of the principle was extended from measures to men by the corrupt practices act of 1908. Senator Bourne in his speech in the Senate on May 5, 1910, describes this feature of the act in the following terms:

> The act provides for the publication of a pamphlet by the secretary of state for the information of voters, in which pamphlet a candidate may have published a statement setting forth his qualifications, the principles and policies he advocates and favors, or any other matter he may wish to submit in support of his candidacy. Each candidate must pay for at least one page, the amount to be paid varying from $100 for the highest office to $10 for the minor offices. Every candidate may secure the use of additional pages at $100 per page, not exceeding three additional pages. Any person may use space in this pamphlet in opposition to any candidate, the matter submitted by him being first served upon the candidate and the space being paid for the same as in the case of candidates. The matter submitted in opposition to candidates must be signed by the author, who is subject to the general laws regarding slander and libel. Information regarding state and congressional candidates is printed in a pamphlet issued by the secretary of state, one copy being mailed to each registered voter in the state. Pamphlets regarding county candidates are issued by the county clerk and mailed to each voter in the county. These pamphlets must be mailed at least eight days before the primary election.

This publicity pamphlet is intended to afford all candidates for nomination or election an equal opportunity of presenting before the voters their views upon public questions. Taken in connection with the publicity pamphlet published to explain legislative measures to be voted on directly by the people, it provides for the complete instruction of the voters of the state on the merits of candidates and issues at primary and general elections. The publicity pamphlet has not yet been introduced into any other state.

THE RECALL

By the recall is meant legal provision for the retirement of an elected officer before the expiry of his term of office, if he has forfeited the confidence of the voters. It is less drastic than impeachment, and is intended to be applied primarily to legislative, rather than executive and judicial, officers. It has been introduced into a number of American cities, beginning with Los Angeles in 1903. It was introduced into Oregon to apply to state officials in 1908 and is described by Senator Bourne as follows:

> Any public officer may be recalled by the filing of a petition signed by 25% of the number of electors who voted in his district in the preceding election. The petition must set forth the reasons for the recall, and if the officer does not resign within five days after the petition is filed a special election must be ordered to be held within twenty days to determine whether the people will recall such officer. On the ballot at such election the reasons for demanding the recall of said officer may be set forth in not more than two hundred words.

His justification of his course in office may be set forth in a like number of words. He retains his office until the results of the special election have been officially declared. No petition can be circulated against any officer until he has held office six months, except that in the case of a member of the state legislature it may be filed at any time after five days from the beginning of the first session after his election. At the special election the candidate receiving the highest number of votes is declared elected. The special election is held at public expense, but a second recall cannot be filed against the same officer unless the petitioners first pay the entire expense of the first recall election.

The recall, in the opinion of Senator Bourne, is an admonitory or precautionary measure, the existence of which should prevent the necessity for its use. At rare intervals there might be occasion for the exercise of the recall against municipal or county officers, but the fact of its existence should prevent the need for its use against the higher officials. The effect of its introduction into the government of a state is to combine the advantages of the American system of elections at regular intervals with those of the English system of elections at irregular intervals. With the percentage of electors required for filing a recall petition set at twenty-five per cent, there is little likelihood of the abuse of the recall for partisan purposes. Its merits in connection with relatively long terms of office are manifest, but the example of Oregon has not yet found any imitators among the other American states. For an interesting modification of the recall in the new Boston city charter, see IX, *Municipal Governments.*

THE INITIATIVE AND REFERENDUM

The initiative, as the name implies, consists in the initiation of legislation by a certain fraction of the voters and its subsequent enactment by a majority of the voters to whom the proposed legislation is referred without the intervention of the legislature. The referendum signifies also the popular veto upon acts of the legislature. The two measures together enable the people to dispense with any representative body to legislate for them and to legislate directly for themselves.

At the end of the year 1908 the initiative and referendum existed nominally in eight states: South Dakota (1898), Utah (1900, but no enabling act, as required by the terms of the direct legislation amendment to the Utah constitution, has yet been passed by the legislature), Oregon (1902), Nevada (1905, the referendum only), Montana (1906), Oklahoma (1907), Maine (1908), and Missouri (1908). In 1910 the initiative and referendum were adopted in Arkansas, Colorado, and Nevada, and in the new State of Arizona. At the present time the further extension of direct legislation is the subject of an active propaganda in various parts of the country, and the movement is gaining ground rapidly in local government in connection with the adoption of commission governments in the cities. Perhaps no proposal is more attractive to the thoughtful voter, impatient with the perverse legislation of misrepresentative legislatures, than this of direct legislation.

In Oregon.—The only state that has yet made any considerable use of the initiative and referendum is Oregon. At the first three general elections after the adoption of the initiative and referendum, those of 1904, 1906, and 1908, thirty-two measures were voted on by the people: two in 1904, eleven in 1906, and nineteen in 1908. Of the twenty-three measures submitted by initiative petitions, seventeen have been accepted and six rejected by the people. Of the five legislative enactments submitted in consequence of referendum petitions, three have been accepted and two rejected by the people. Of the four measures referred by the Legislature to the people, two were accepted and two rejected. The majorities varied in 1908 from over 48,000 in favor of instructing legislators to vote for people's choice for United States senators (an instruction which was not obeyed except by those who had pledged themselves so to do in advance of the primary) to over 49,000 against increasing the pay of legislators. The votes cast upon measures submitted have fluctuated around eighty per cent of the vote cast at the same election for presidential electors or governor, as the case might be, ranging from ninety-two per cent on the local option liquor amendment in 1904 to sixty-four per cent on a bill to create a new county in 1908. Measures have been trickily worded and submitted in the hope of fooling the people, as in the case of the local option bill proposed by the liquor interests in 1906. That bill was defeated by a majority somewhat larger than that by which a genuine local option amendment was adopted in 1904. There is every indication that the voting on every measure that has been submitted in Oregon has reflected the deliberate judgment of the voters.

The most striking result of direct legislation by the people in Oregon has been the enactment of a series of progressive measures, which the Legislature regularly refused to pass. Thus, in 1904, a direct primary law with popular selection of United States senators was passed over the Legislature by the initiative and referendum; in 1906, an amendment requiring a referendum on any act calling a constitutional convention, and another extending the application of the initiative and referendum to all local, special, and municipal laws were passed in the same way; and in 1908 were similarly passed the bill instructing legislators to vote for the people's choice for United States senator, the recall, the corrupt practices act with publicity pamphlet feature, and an amendment authorizing a proportional representation law. Several of these laws were the result of a systematic campaign in favor of more popular government by a group of bold political innovators, who have associated themselves into an organization for the purpose of promoting progressive legislation, called the People's Power League.

Popular Government in Oregon.— The Oregon People's Power League has only begun its work of remodeling the government of the state. In the summer of 1909 an introductory letter was issued, setting forth its program for the further amendment of the Oregon constitution. The purpose of the suggested alterations was declared to be to provide a system by which the conduct of state and county government might be made as efficient and economical as the management by the citizens of their private affairs. The authors of the letter pointed out that there were forty-seven boards and commissions to enforce the laws and manage the business of the State of Oregon. In addition to these there were the governor, secretary of state, state treasurer, superintendent of instruction, state printer, attorney-general, commissioner of labor, thirty-four sheriffs, etc., each one in great degree independent of all the others and of everyone else. There was no one officer who was responsible to the people of the state for the enforcement of the laws and the efficient management of the state business. The constitution provides that the governor "shall take care that the laws of the state be faithfully executed," but gives him no power beyond that of making recommendations. Moreover, the Oregon voters were required to choose too many public officers. At some general elections there were from twenty to thirty-nine places to be filled. The number varied in different counties and at different elections, the usual number of candidates ranging from eighty to 160, and the offices in importance from United States senator to county surveyor. Since to acquire a personal knowledge of so many candidates was a physical impossibility, the average citizen was compelled to vote a party ticket.

The authors of the letter proposed a plan by which only the most important officers should be elected directly by the people: after the general election in 1914 the lowest number to be voted on at a general election would be five, including representative in Congress and United States senator; and the highest number would be eight. All others would be appointed by the elected officers, and would be held to a strict accountability to them. The proposal in detail was as follows:

(1) To establish an official gazette to be published quarterly and to be mailed to every registered Oregon voter and taxpayer at the public ex-

pense, giving complete and reliable information concerning the administration of the state and local governments and the work of the legislative assembly. The gazette was to be edited by three people's inspectors of government, and the cost was estimated at sixty cents per voter per year.

(2) To revise the structure of state government. The senate and house of representatives should be maintained at thirty and sixty members each respectively, but their terms should be extended to six years. The power should be reserved to the people to recall either or both houses bodily by means of a petition and special election, as in the case of individual officers under the existing recall. Legislative sessions should be held annually, instead of biennially, as at present, and the legislators should be better paid. The people should retain the initiative and referendum, but the legislature should be enabled to submit measures in competition with those proposed by initiative petitions. Not more than twelve measures should be submitted by the legislature at any one election. (This restriction was suggested by the Portland municipal election in June, 1909, at which the Portland municipal council ordered the referendum on twenty-seven of its measures, which was regarded as excessive. However, this restriction was later dropped from the program.) The legislature should be able to declare an act an emergency measure, and by a vote of three fourths of the members in each house order that it be put into effect at once, thus in effect suspending the people's right to demand a referendum before a law is put into effect, but such measures might be repealed at a subsequent referendum election. The presiding officers of the two houses should be chosen from outside the membership of the legislature, should have no vote in its proceedings, and should not be permitted to appoint the standing committees. With some exceptions committee meetings should be open, and public hearings should be granted on all proposed legislative measures. Each member of the legislature should be required to pledge himself under oath not to engage in log-rolling nor to obey any party caucus the conclusions of which would be contrary to his judgment of the best interests of the people, but to cast every vote upon his own individual responsibility. Any citizen should have the right to bring an action in the circuit court to have a law set aside on the ground of undue influence, and if upon trial a jury should find that there was undue influence, the law should not go into effect unless approved by the people at a referendum election. (This innovation was dropped from the final program.) Finally, a system of proportional representation should be adopted, by which each sixtieth part of the voters might be assured of a representative in the lower house, and each thirtieth of a representative in the state senate. Candidates for the legislature should be nominated by districts in accordance with the existing mode of direct nominations, but should be chosen by the voters of the state at large, each voter voting for but one candidate for senator and one candidate for representative.

(3) The governor should be elected for a term of six years, corresponding to that of the legislature. He should have the appointment of sheriffs and district attorneys for each county, and should also appoint the attorney general, the secretary of state, state treasurer, state printer, superintendent of public instruction, secretary of labor, and the state business manager. These officials should constitute the governor's cabinet. The state business manager, subject to the governor's direction, should manage the business departments and affairs of the state. A state auditor should be elected by the people for a term of six years. The governor should be personally and directly responsible for the administration of the state, and should have complete authority over all matters at present managed by commissions and boards, except those intrusted to the railroad commission. The governor should have the power to introduce bills into the legislature, both he and his cabinet having seats on the floor of each house with the right to speak but not to vote. The governor should,

moreover, have the right to appeal from a refusal or failure of the legislature to pass an administration measure to a referendum vote of the people. The governor's veto power, however, should be withdrawn, and both he and his cabinet should be required to answer any questions submitted to them in writing by a member of the legislature concerning the conduct of the administration, unless the giving of such an answer would be prejudiced to the public interest.

(4) County government should be reorganized by intrusting the conduct of county affairs to a board of directors, to be elected by the voters for six years, subject to the recall. The board of directors in each county should employ a county business manager at a fixed salary, the selection not to be confined to citizens of the State of Oregon, who should be intrusted with the execution of the plans of the board of directors.

(5) Finally, judicial procedure in the state should be simplified. (This should be accomplished chiefly by the modification of the procedure in appeals, but in the final formulation of the program it was further proposed that petty juries might render a verdict in which not less than nine jurors concurred.)

This is a bold and far-reaching program. Should it be adopted in full, the government of the State of Oregon would be profoundly altered. Yet it cannot be dismissed as the freak proposal of an irresponsible band of political fanatics. The authors of the program are precisely the same persons as those who are chiefly responsible for the adoption of the initiative and referendum, direct nominations, the recall, the corrupt practices act, and other measures which no one in Oregon now seriously proposes to give up. In the same year in which this program was published by the reformers of the Far West another program of very similar aim and nature was published by a political thinker in the Far East—viz., Herbert Croly's *The Promise of American Life.*

The Oregon People's Power League is composed of politicians too shrewd to attempt so radical a transformation of the government of their state at a single election. They know that they must convince the voters of the wisdom of their program, and that it takes time to alter people's convictions. In the official pamphlet containing a copy of all measures submitted to the people at the general election in Nov., 1910, the first step in the execution of their program is revealed. Of the 202 pages in the pamphlet, 52 are occupied by the proposals of the People's Power League or of the opposition to the League, and by the arguments on both sides. The third and fourth sections of the program of 1909, relating to the reorganization of the state executive and of county government, are omitted. In their place is substituted a bill relating to voting on candidates for the presidency at the primaries, and for paying the expenses of delegates to the national conventions out of the treasury of the state. The fifth section, relating to the simplification of judicial procedure, is submitted to the people, but there is little or no opposition to it, if one may judge by the absence of an argument against it from the official publicity pamphlet. The first and second sections of the program, relating to the election of people's inspectors of government and the publication of the Oregon *Official Gazette*, and to the reorganization of the legislative branch of the state government, are submitted to the people.

The following brief summary of the results of the Oregon elections in Nov. will show to what extent the above program was adopted: State-wide prohibition was defeated, local option was adopted. The legislature was prohibited from enacting tax laws without popular consent; a new constitutional convention was voted down; the primary law was extended to presidential nominations, etc.; counties were permitted to incur additional indebtedness for road-making, but public purchase of railroads was defeated. The *Gazette* idea was rejected, as well as the reconstruction of the legislature. A radical employers' liability bill was adopted, which provides that contributory negligence shall not be a defense. Woman suffrage was again defeated.

THE SHORT BALLOT

While the reformers of the West have been trying to make men's votes more effective through direct legislation and other radical changes in the existing system of government, those of the East have been trying to accomplish the same result without changing the representative system. The plan is to simplify the voter's task, and thus make possible an intelligent use of the ballot. Recognizing the impossibility of choosing wisely among several hundred candidates for offices, all of which must be filled at the same election, the eastern reformers have undertaken to reduce the number of offices to be filled at any one election to a reasonable number. Their slogan is the Short Ballot, by which they mean that the voters should attempt to choose only the most important officials, and should then hold these officials to a strict accountability for the selection of proper persons to be appointed to the subordinate positions. As yet the Short Ballot has not been introduced into any state elections, but it has found a place in municipal elections in connection with government by commission, and has won many advocates among the thinking citizens and better grade of politicians. An energetic short-ballot organization was established in 1909, with headquarters in New York, and a propaganda has been set on foot which already gives promise of bearing early fruit.

WOMAN SUFFRAGE

The claim of the right of women to the vote is now recognized as one of the leading questions of the day.

The advocates of woman suffrage are no longer ridiculed, but are met with serious consideration.

During the past year there have been evidences of a change of sentiment in favor of this claim. This is partly due to the suffragettes of England, partly to the fact that women who are more and more interested in the social and philanthropic questions of the day find they are without political power vitally to change conditions, but chiefly because of the recognition of changed economic conditions which have forced women into the industrial world without giving them the protection of a political status.

An active educational campaign has been carried on under the auspices of the National Woman Suffrage Association, of which the Rev. Anna Howard Shaw is president. Through the liberality of Mrs. O. H. P. Belmont, this association was enabled to move its headquarters from Warren, O., to New York City, and thus be in the center of activity. Such support by many women of wealth has made possible a more effective propaganda than ever before in the history of the cause. Many new organizations have been established, and in New York City alone, besides the National Association, eight societies maintain public headquarters: The New York State Association; The Political Equality Association, with its six suffrage settlements; The Woman Suffrage Party; The Equal Franchise Society; The Equality League of Self-supporting Women; The College Women's League; The Suffragette Association; The Joan of Arc League, and The Men's League for Woman Suffrage.

The first woman's political convention was held in New York, in Nov., 1909, Mrs. Carrie Chapman Catt presiding, and a Woman Suffrage Party, organized with branches in every assembly district in Greater New York. This method of district organization has been adopted throughout New York State, so that during the last legislative session pressure was brought to bear on nearly every legislator by his own constituents to use his influence in favor of this measure.

Political Settlements.—The establishment of political settlements in the tenement districts of Greater New York marks the beginning of a new epoch in the educational campaign of "Votes for Women." Six such settlements have been opened in different parts of the city where classes are conducted in the study of political questions and government, thus preparing thousands of young men and women to use the ballot intelligently when full citizenship is given to them.

Following the custom of English women, American suffragists are holding open-air meetings on street corners and in public parks. The first big demonstration of American women was held in remonstrance to the action of the New York State Legislature in killing the woman suffrage bill in the judiciary committee. Hundreds of women walked down Fifth Avenue behind a band to Union Square, where some ten thousand people listened to suffrage speeches.

In several states, New York, Massachusetts, Illinois, Pennsylvania, Maryland, and New Jersey, men prominent in public life have formed "Voters' Leagues for Women Suffrage," and are thus adding great strength to the ranks of the suffragists.

In April, 1910, the National Association held its annual convention in Washington, D. C., and for the first time in its history was addressed by the President of the United States. Although Mr. Taft had formerly advocated woman suffrage, he expressed a fear that if women were enfranchised the intelligent women would not vote. As the women assembled to advocate the cause of " Votes for Women " considered themselves fairly intelligent, they were displeased with this remark, and a few young enthusiasts in the rear of the hall hissed. This caused much regret in the ranks of the suffragists, who sent a letter of apology to the President.

At the time of this convention a mammoth petition containing nearly 500,000 signatures was presented to Congress asking that the question of woman suffrage be submitted to the voters. It produced no effect on the judiciary committee, which voted not to report a suffrage bill.

A delegation of suffragists was given a respectful hearing at the regular annual meeting of the House of Governors, at Washington, in Jan. Several governors present spoke in favor of extending the privilege of the ballot to women.

At the beginning of the year 1910 women had full suffrage in the states of Wyoming, Colorado, Utah, and Idaho; municipal suffrage in Kansas; some form of school suffrage in twenty-six states: Arizona, Colorado, Connecticut, Delaware, Florida, Iowa, Illinois, Indiana, Idaho, Kansas, Michigan, Massachusetts, Minnesota, Montana, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Oklahoma, Ohio, South Dakota, Utah, Vermont, Washington, and Wisconsin; school and tax-paying suffrage in New York, Delaware, and Montana; and tax-paying suffrage in Louisiana and Iowa; no suffrage of any kind in the twelve remaining states.

During 1910 constitutional amendments to extend the suffrage to women have been submitted to the voters by the legislatures of Washington, South Dakota, Oklahoma, and Oregon. The amendment was adopted in Washington. Woman suffrage was rejected by the constitutional conventions of Arizona and New Mexico. The New York State Legislature passed a bill empowering women in all towns, villages, and third-class cities to vote on bonding propositions. They already had the tax and school vote.

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VII. THE NATIONAL ADMINISTRATION

S. N. D. North

THE PRESIDENT AND VICE PRESIDENT

PRESIDENTS OF THE UNITED STATES

Name.	Born.	Residence when Elected.	Politics.	Inaugurated.	Died.
1 George Washington	Feb. 22, 1732	Mount Vernon, Va.	None	1789	Dec. 14, 1799
2 John Adams	Oct. 30, 1735	Quincy, Mass.	Fed.	1797	July 4, 1826
3 Thomas Jefferson	April 13, 1743	Monticello, Va.	Dem.	1801	July 4, 1826
4 James Madison	Mar. 16, 1751	Montpelier, Va.	Dem.	1809	June 28, 1836
5 James Monroe	Apr. 28, 1758	Oak Hill, Va.	Dem.	1817	July 4, 1831
6 John Quincy Adams	July 11, 1767	Quincy, Mass.	Fed.	1825	Feb. 23, 1848
7 Andrew Jackson	May 15, 1767	Hermitage, Tenn.	Dem.	1829	June 8, 1845
8 Martin Van Buren	Dec. 5, 1782	Kinderhook, N. Y.	Dem.	1837	July 24, 1862
9 William H. Harrison	Feb. 9, 1773	North Bend, O.	Whig	1841	April 4, 1841
10 John Tyler	Mar. 29, 1790	Williamsburg, Va.	Dem.	1841	Jan. 17, 1862
11 James Knox Polk	Nov. 2, 1795	Nashville, Tenn.	Dem.	1845	June 15, 1849
12 Zachary Taylor	Nov. 24, 1784	Baton Rouge, La.	Whig	1849	July 9, 1850
13 Millard Fillmore	Jan. 7, 1800	Buffalo, N. Y.	Whig	1850	Mar. 9, 1874
14 Franklin Pierce	Nov. 23, 1804	Concord, N. H.	Dem.	1853	Oct. 8, 1869
15 James Buchanan	April 23, 1791	Wheatland, Pa.	Dem.	1857	June 1, 1868
16 Abraham Lincoln	Feb. 12, 1809	Springfield, Ill.	Rep.	1861	April 15, 1865
17 Andrew Johnson	Dec. 20, 1808	Greenville, Tenn.	Rep.	1865	July 31, 1875
18 Ulysses S. Grant	April 27, 1822	Washington, D. C.	Rep.	1869	July 23, 1885
19 Rutherford B. Hayes	Oct. 4, 1822	Fremont, O.	Rep.	1877	Jan. 17, 1893
20 James A. Garfield	Nov. 19, 1831	Mentor, O.	Rep.	1881	Sept. 19, 1881
21 Chester A. Arthur	Oct. 5, 1830	New York City	Rep.	1881	Nov. 18, 1886
22 Grover Cleveland	Mar. 18, 1837	Buffalo, N. Y.	Dem.	1885	June 24, 1908
23 Benjamin Harrison	Aug. 20, 1833	Indianapolis, Ind.	Rep.	1889	Mar. 13, 1901
24 Grover Cleveland	Mar. 18, 1837	New York City	Dem.	1893	June 24, 1908
25 William McKinley	Jan. 29, 1843	Canton, O.	Rep.	1897-'01	Sept. 14, 1901
26 Theodore Roosevelt	Oct. 27, 1858	Oyster Bay, N. Y.	Rep.	1901	
27 William H. Taft	Sept. 15, 1857	Cincinnati, O.	Rep.	1909	

THE ELECTORAL COLLEGE

The ratio of representation in the House of Representatives, upon which the Electoral College is based, has been as follows:

Constitution, 1789, ratio 30,000	65	Seventh Census, 1853, ratio 93,423	233
First Census, 1793, ratio 33,000	105	Eighth Census, 1863, ratio 127,381	243
Second Census, 1803, ratio 33,000	141	Ninth Census, 1873, ratio 131,425	293
Third Census, 1813, ratio 35,000	181	Tenth Census, 1883, ratio 151,911	325
Fourth Census, 1823, ratio 40,000	213	Eleventh Census, 1893, ratio 173,900	356
Fifth Census, 1833, ratio 47,700	240	Twelfth Census, 1900, ratio 194,182	386
Sixth Census, 1843, ratio 70,680	223		

The population at each census for purposes of representation was as follows:

1790	3,929,214	1840	17,069,453	1880	50,155,783
1800	5,308,483	1850	23,191,876	1890	62,622,250
1810	7,239,881	1860	31,443,321	1900	74,565,900
1820	9,633,822	1870	38,558,371	1910	91,402,151
1830	12,866,020				

VII. THE NATIONAL ADMINISTRATION

VOTE FOR PRESIDENT, 1904, 1908

STATE.	EL. VOTE.		POPULAR VOTE, 1908.		EL. VOTE.		POPULAR VOTE, 1904.	
	Taft, Rep.	Bryan, Dem.	Taft, Rep.	Bryan, Dem.	Roosevelt, R.	Parker, Dem.	Roosevelt, R.	Parker, Dem.
Alabama	..	11	26,283	74,374	..	11	22,472	79,857
Arkansas	..	9	56,679	87,015	..	9	46,860	64,434
California	10	..	214,398	127,492	10	..	205,226	89,294
Colorado	..	5	123,732	126,772	5	..	134,687	100,105
Connecticut	7	..	112,815	68,255	7	..	111,089	72,909
Delaware	3	..	25,007	22,072	3	..	23,714	19,360
Florida	..	5	10,654	31,104	..	5	8,314	27,046
Georgia	..	13	41,692	72,350	..	13	24,003	83,472
Idaho	3	..	52,621	36,162	3	..	47,783	18,480
Illinois	27	..	629,932	450,810	27	..	632,645	327,606
Indiana	15	..	348,993	338,262	15	..	369,289	274,345
Iowa	13	..	275,210	200,771	13	..	307,907	149,141
Kansas	10	..	197,216	161,209	10	..	210,873	84,800
Kentucky	..	13	235,711	244,092	..	13	205,277	217,170
Louisiana	..	9	8,958	63,568	..	9	5,205	47,708
Maine	6	..	66,987	35,403	6	..	64,437	27,630
Maryland	2	6	116,513	115,908	1	7	100,497	109,446
Massachusetts	16	..	265,966	155,543	16	..	257,822	165,746
Michigan	14	..	333,313	174,313	14	..	361,866	134,151
Minnesota	11	..	195,876	109,395	11	..	216,651	55,187
Mississippi	..	10	4,363	58,286	..	10	3,147	53,280
Missouri	18	..	347,203	346,574	18	..	321,447	295,847
Montana	3	..	32,333	29,326	3	..	34,392	21,773
Nebraska	..	8	126,997	131,099	8	..	138,558	51,876
Nevada	..	3	10,775	11,212	3	..	6,867	3,982
New Hampshire	4	..	53,144	33,655	4	..	54,179	33,905
New Jersey	12	..	265,326	182,567	12	..	245,165	164,566
New York	39	..	870,070	667,468	39	..	859,533	683,981
North Carolina	..	12	114,887	136,928	..	12	82,442	124,121
North Dakota	4	..	57,680	32,885	4	..	52,595	14,253
Ohio	23	..	572,312	502,721	23	..	600,096	344,674
Oklahoma	..	7	110,558	122,406	..	..	....	....
Oregon	4	..	62,530	38,049	4	..	60,455	17,521
Pennsylvania	34	..	745,779	448,785	34	..	840,949	335,430
Rhode Island	4	..	43,942	24,706	4	..	41,605	24,839
South Carolina	..	9	3,963	62,288	..	9	2,271	52,863
South Dakota	4	..	67,466	40,266	4	..	72,083	22,002
Tennessee	..	12	118,324	135,608	..	12	105,369	131,653
Texas	..	18	65,666	217,302	..	18	51,242	167,220
Utah	3	..	61,015	42,601	3	..	62,444	33,413
Vermont	4	..	39,558	11,500	4	..	40,459	9,777
Virginia	..	12	52,573	82,946	..	12	46,450	80,638
Washington	5	..	106,062	58,691	5	..	101,504	28,098
West Virginia	7	..	137,869	111,418	7	..	132,608	100,850
Wisconsin	13	..	247,747	166,632	13	..	280,164	124,107
Wyoming	3	..	20,846	14,918	3	..	20,489	8,830
Total	321	162	7,677,544	6,405,707	336	140	7,613,130	5,077,386
Plurality	159	...	1,271,837	....	196	...	2,535,744	....

[NOTE.] In 1908 there were cast for Debs (Soc.), 420,464 votes; for Hisgen (Indep. League), 86,628; for Chafin (Pro.), 251,570. In 1904 there were cast in addition, for Debs (Soc.), 401,587 votes; for Swallow (Pro.), 260,297; for Watson (Pop.), 114,637; for Corregan (S. L.), 32,657.

THE ADMINISTRATION

President, William Howard Taft, Ohio. Salary, $75,000; traveling expenses, $25,000. Secretary to the President, Charles D. Norton, Ill. Salary, $6,000.

Vice President, James Schoolcraft Sherman, New York. Salary, $12,000. He presides over the Senate, with no vote except in case of a tie.

The President and Vice President are elected for terms of four years by the State Electoral Colleges, whose membership is based upon the congressional apportionment as shown upon the opposite page. This apportionment is revised by Congress after each decennial census. A new apportionment may be made at the present session of the Sixty-first Congress, based upon the population of 1910.

Nine cabinet officers, constituting the President's advisory council, and each in charge of one of the great departments of the Government, are nominated by the President and confirmed by the Senate, for a term subject to the President's pleasure. Salary, $12,000 each, with the exception of the Department of State, which see. The present Cabinet was thus appointed March 6, 1909.

By act of Congress, in the case of vacancy in office of the President and Vice President, the cabinet officers succeed to the Presidency in the order named below:

DEPARTMENT OF STATE

Secretary of State, Philander Chase Knox, Pa. Salary, $8,000. (Reduced from $12,000 by act of Congress, to permit Secretary Knox to accept a Cabinet position, an increase in the salary of which he had voted for when a member of the Senate.)

Charged with negotiations relating to foreign affairs.

Assistant Secretary, Huntington Wilson, Ill. $5,000.

Second Assistant Secretary, Alvey A. Adee, D. C. $4,500.

Third Assistant Secretary, Chandler Hale, Me. $4,500.

Director of the Consular Service, Wilbur J. Carr, N. Y. $4,500.

Counselor, Chandler P. Anderson, N. Y. $6,000.

Bureau of Accounts. Chief, Thomas Morrison, N. Y. $2,300.

Bureau of Appointments. Chief, M. M. Shand, N. J. $2,100.

Bureau of Citizenship. Chief, Richard W. Flournoy, Jr., Md. $2,100.

Consular Bureau. Chief, Herbert C. Hengstler, Ohio. $2,250.

Diplomatic Bureau. Chief, Sydney Y. Smith, D. C. $2,250.

Bureau of Indexes and Archives. Chief, John R. Buck, Me. $2,100.

Bureau of Rolls and Library. Chief, John A. Tonner, O. $2,100.

Bureau of Trade Relations. Chief, John Ball Osborne, Pa. $2,100. Charged with compilation of commercial information for the use of the Department of State, and with collection of consular reports.

TREASURY DEPARTMENT

Secretary of the Treasury, Franklin MacVeagh, Ill.

Charged with management of the national finances. He prepares plans for improvement of the revenue and support of the public credit; superintends collection of the revenue; grants warrants for all moneys paid from and into the Treasury; controls construction of public buildings; coinage and printing of money; and the administration of the life-saving, revenue cutter, and the public health and marine hospital service.

Assistant Secretaries — Charles D. Hilles, N. Y., James F. Curtis, Mass., A. Piatt Andrew, Mass. $5,000 each.

Supervising Architect, James K. Taylor, Pa. $6,000. Charged with superintending of construction repair and of public buildings.

Engraving and Printing. Chief of Bureau, Joseph E. Ralph, Ill. $5,500. Produces all the securities and similar work of the Government printed from steel plates.

Secret Service. Chief John E. Wilkie, Ill. $4,000. Charged with detection of counterfeiting, and similar frauds on the Government.

Comptroller of the Treasury, Robert J. Tracewell, Ind. $5,500. Construes the laws relating to appropriations and methods of rendering and stating accounts.

Treasurer of the United States, Lee McClung, Tenn. $8,000. Charged with the receipt and disbursement of all public moneys deposited in the Treasury and subtreasuries and in national bank United States depositories.

Comptroller of the Currency, Lawrence O. Murray, New York. $5,000. Has supervision of the national banks, their examination and reports; the preparation and issue of national-bank circulation; the redemption and destruction of national bank notes.

Internal Revenue. Commissioner, Royal E. Cabell, Va. $6,000. General supervision of the collection of all internal revenue taxes, and the enforcement of internal revenue laws.

The Mint. Director, George E. Roberts, Ia. $4,500. General supervision of the mints and assay offices.

Public Health and Marine Hospital Service. Surg.-General, Walter Wyman, Mo. $5,000. Charged with the framing and enforcement of regulations for the prevention of the introduction and spread of contagious diseases; supervision of the quarantine service of the United States, and of the marine hospitals.

WAR DEPARTMENT

Secretary of War, Jacob McGavock Dickinson, Tenn.

Charged with supervision of national defense, and army expenditures.

Assistant Secretary of War, Robert Shaw Oliver, N. Y. $6,000.

The General Staff. Chief, Maj.-Gen. **Leonard Wood. Charged with preparation of plans for the national defense, and the promotion of the efficiency of the Army.**

The chiefs of the military bureaus are officers of the Regular Army of the United States, as follows:

Adjutant-General, Maj.-Gen. F. C. Ainsworth. $8,000.

Inspector-General, Brig.-Gen. E. A. Garlington. $6,000.

Quartermaster-General, Brig.-Gen. J. B. Aleshire. $6,000.

Commissary-General, Brig.-Gen. H. G. Sharpe. $6,000.

Surgeon-General, Brig.-Gen. G. H. Torney. $6,000.

Paymaster-General, Brig.-Gen. C. H. Whipple. $6,000.

Chief of Engineers, Brig.-Gen. William H. Bixby. $6,000.

Chief of Ordnance, Brig.-Gen. William Crozier. $6,000.

Judge-Advocate General, Brig.-Gen. G. B. Davis. $6,000.

Chief Signal Officer, Brig.-Gen. James Allen. $6,000.

Chief of Bureau of Insular Affairs, Brig.-Gen. C. R. Edwards. $6,000.

Board of Engineers for Rivers and Harbors. A permanent body which investigates in their engineering, commercial, navigable and economic aspects all surveys and river and harbor improvements proposed by Congress.

DEPARTMENT OF JUSTICE

Attorney-General, George Woodward Wickersham, N. Y.

Represents the United States in all legal matters.

Solicitor-General, Frederick W. Lehmann, Missouri. $10,000. Charged with the business of the Government in the Supreme Court and in State Courts.

Assistant to Attorney-General, Wm. S. Kenyon, Ia. $7,000. Charged with matters arising under the federal anti-trust and interstate commerce laws. Seven Assistant Attorneys-General. $5,000 each.

Solicitor State Department, J. Reuben Clark, Jr., Utah. $5,000.

POST OFFICE DEPARTMENT

Postmaster General, Frank Harris Hitchcock, Mass.

Has direction and management of the Post Office Department.

First Assistant Postmaster-General, C. P. Grandfield, Mo. $5,000. Charged with postmasters' appointments; salaries and allowance; city delivery service.

Second Assistant Postmaster-General, Joseph Stewart, Mo. $5,000. Charged with railway adjustments, miscellaneous transportation, foreign mails, railway mail service, inspection equipment.

Third Assistant Postmaster-General, James J. Britt, N. C. $5,000. Charged with financial system, stamps, money orders, registered mails, classification of domestic mail matter, redemption.

Fourth Assistant Postmaster-General, P. V. DeGraw, Pa. $5,000. Charged with rural mails, supplies, dead letters, post-route maps.

NAVY DEPARTMENT

Secretary of Navy, George von Lengerke Meyer, Mass.

Charged with direction of the Navy and superintendence of construction, equipment, and employment of vessels of war.

Assistant Secretary, Beekman Winthrop, New York. $5,000.

General Board of the Navy. The General Board is advisory to the Secretary of the Navy, and is composed of the following officers:

Admiral of the Navy George Dewey, president; Rear-Adm. Raymond P. Rodgers, president of Naval War College; Rear-Adm. Richard Wainwright, aid for operations; Rear-Adm. William P. Potter, aid for personnel; Rear-Adm. Aaron Ward, aid for inspections; Capt. Frank F. Fletcher, aid for material; Capt. Bradley A. Fiske; Capt. Templin M. Potts, chief intelligence officer; Com. William J. Maxwell; Com. Spencer S. Wood, secretary.

Bureau of Yards and Docks. Chief, Civil Engineer Richard C. Hollyday. $6,000. Charged with the construction and maintenance of docks and naval buildings.

Bureau of Equipment. By authority of the Naval Appropriation Act of 1910 abolished for one year, and its duties distributed among the other bureaus, as a trial of the Meyer plan of naval reorganization.

Bureau of Navigation. Chief, Rear-Adm. R. F. Nicholson. $6,000. Charged with the education and supervision of line officers and of enlisted men.

Bureau of Ordnance. Chief, Rear-Adm. N. E. Mason. $8,000. Charged with supervision of the Torpedo Station, magazines on shore, and with the manufacture of explosives, arms and equipment.

Bureau of Construction and Repair. Naval Constructor, Richard M. Watt. $6,000. Duties relate to designing, building and repairing ships, and their docking and care.

Bureau of Steam Engineering. Engineer-in-Chief, Rear-Adm. Hutch I. Cone. $6,000. Charged with designing, building and repairing steam machinery for naval ships.

Bureau of Supplies and Accounts. Paymaster-Gen. Thomas I. Cowie, $6,000. Charged with the supply of funds for disbursing officers, and the purchase of all naval supplies.

Bureau of Medicine and Surgery. Surgeon-General, Charles F. Stokes. $6,000. Control of naval hospitals and hospital ships.

Judge-Advocate-General, Capt. Robert L. Russell. $5,000. Charged with supervision of all legal aspects of the Navy Department. Solicitor, Henry M. Butler, $4,000.

Marine Corps. Commandant, Major-Gen. ——. $8,000.

DEPARTMENT OF THE INTERIOR

Secretary of the Interior, Richard Achilles Ballinger, Washington.

Charged with patents, pensions, public lands and parks, education, and Indian affairs.

First Assistant Secretary, Frank Pierce, Utah. $6,000.

General Land Office. Commissioner, Fred Dennett, N. D. $5,000. Charged with the survey, management and disposition of the public lands.

Patent Office. Commissioner, Edward B. Moore, Mich. $5,000. Administration of the patent laws, and supervision of the registration of trade-marks.

Pension Office. Commissioner, James L. Davenport, D. C. $5,000. Supervision of adjudication of claims arising under laws granting Army or Navy service pensions.

Bureau of Indian Affairs. Commissioner, Robert G. Valentine, Mass. $5,000. Has charge of the Indian tribes of the United States (exclusive of Alaska).

Bureau of Education. Commissioner, Elmer E. Brown, Cal. $5,000. Collects statistics and general information regarding education; has charge of the schools for native Alaskan children; supervises the reindeer industry in Alaska; administers the endowment fund for agricultural colleges and mechanical arts.

Geological Survey. Director, George Otis Smith, Me. $6,000. Charged with classification of the public lands and examination of the geologic structure, mineral resources, and the mineral products of the national domain.

Reclamation Service. Director, Frederick H. Newell. $7,500. Charged with the survey, construction, and operation of the irrigation works in arid states, authorized by the act of June 17, 1902.

Bureau of Mines. Director, Joseph A. Holmes, S. C. $6,000. To promote the mining industry of the United States, foster the safety of miners, and give attention to the treatment of ores and the use of explosives. Established 1910.

DEPARTMENT OF AGRICULTURE

Secretary of Agriculture, James Wilson, Iowa.

Exercises supervision over agricultural industry, experiment stations, quarantine stations for imported cattle, inspection of foods and drugs, National Forest Reserves, and interstate game laws.

Assistant Secretary, Willett M. Hays, Minn. $5,000.

Bureau of Animal Industry. Chief, Dr. A. D. Melvin, Ill. $5,000. Conducts inspection of animals and meat food products; investigates communicable diseases and their prevention, and the breeding and feeding of animals.

Bureau of Plant Industry. Chief, B. T. Galloway, Mo. $5,000. Charged with the improvement of crops by breeding and selection, and the introduction of new plants and seeds to different parts of the United States.

Forest Service. Chief, Henry S. Graves. $5,000. Charged with the administration of the National Forests, the investigation of forest problems and encouragement of protecting growing timber.

Bureau of Chemistry. Chemist, H. W. Wiley, Ind. $5,000. Charged with the analysis of agricultural products and fertilizers, and the investigation of the composition and adulteration of foods and drugs.

Bureau of Soils. Chief, Milton Whitney, Md. $3,500. Charged with investigating soils in their relations to climate and organic life.

Bureau of Entomology. Chief, L. O. Howard, N. Y. $4,000. Charged with dissemination of information regarding injurious insects affecting forests, crops and fruits, and means of their elimination.

Bureau of Biological Survey. Chief, Henry W. Henshaw, Mass. $3,000. Investigates the economic relations of animal life. Charged with enforcing the bird and game laws.

Office of Experiment Stations. Direc

tor, A. C. True, Conn. $4,000. Authorized to promote the interests of agricultural education and investigation.

Office of Public Roads. Director, Logan W. Page, Mass. $3,000. Charged with investigating road making and road materials, and collecting information regarding systems of road management.

Weather Bureau. Chief, Willis L. Moore, Ill. $6,000. Charged with forecasting of weather for the benefit of agriculture, commerce and navigation.

DEPARTMENT OF COMMERCE AND LABOR

Secretary of Commerce and Labor, Charles Nagel, Mo.

Charged with promoting commerce, mining, manufacturing, shipping, fisheries, transportation, and labor. Also the supervision of alien immigration, and naturalization.

Assistant Secretary, Benjamin S. Cable, Ill. $5,000.

Bureau of Corporations. Commissioner, Herbert Knox Smith, Conn. $5,000. Authorized to investigate the organization and conduct of any corporation or combination engaged in interstate or foreign commerce (except railroads).

Bureau of Manufactures. Commissioner Albertus H. Baldwin, Conn. $4,000. Charged with development of manufacturing interests and markets therefor, domestic and foreign, by the publication of information.

Bureau of Labor. Commissioner, Charles P. Neill, D. C. $5,000. Charged with matters pertaining to labor in its relations to capital, and the means of promoting prosperity among the laboring classes.

Light-House Service. Commissioner, George R. Putnam, Ia. $5,000. Charged with the administrative duties relating to light-houses and protective signals.

The Census Office. Director, E. Dana Durand, Cal. $7,000. The duty of the Census Office is to take, compile and publish the decennial censuses of the United States; the quinquennial censuses of agriculture and manufactures; the deaths in registration areas; the statistics of cotton ginned, and of cotton consumed; the annual statistics of cities; and to make such other statistical investigations as Congress may order.

Coast and Geodetic Survey. Superintendent, Otto H. Tittmann, Mo. $6,000. Charged with survey of coasts under the jurisdiction of the United States, and publication of charts covering these coasts.

Bureau of Fisheries. Commissioner, George M. Bowers, W. Va. $6,000. Charged with the propagation of useful food fishes, investigation of deep sea fishing grounds, and care of the Alaskan salmon fisheries and the Pribilof Islands seal herds.

Bureau of Navigation. Commissioner, Eugene T. Chamberlain, N. Y. $4,000. Charged with superintendence of the commercial marine, issue of licenses, and collection of tonnage taxes.

Bureau of Immigration and Naturalization. Commissioner-General, Daniel J. Keefe, Mich. $5,000. Charged with administration of immigration and naturalization laws.

Bureau of Standards. Director, Samuel W. Stratton, Ill. $5,000. Charged with comparing and testing standards used in scientific investigations, commerce and educational institutions, with standards adopted or recognized by the Government.

INDEPENDENT BUREAUS AND INSTITUTIONS

Smithsonian Institution. Secretary, Charles D. Walcott. $7,500. Established 1846, under the terms of James Smithson's will, for the "increase and diffusion of knowledge among men." The former is accomplished by promoting original scientific research, and the latter by publications and lectures. Managed by a Board of Regents. It cooperates with the Government and national scientific bodies.

National Museum. Under the same management. Charged with preserving and utilizing objects of art, ethnological collections, geological and mineralogical specimens belonging to the United States.

Pan-American Union. Director-General, John Barrett, Ore. $5,000. Established for the purpose of developing closer relations of commerce and friendship between the twenty-one republics of the Western Hemisphere.

Interstate Commerce Commission, seven members, each receiving an annual salary of $10,000. J. C. Clements, Ga., C. A. Prouty, Vt., F. K. Lane, Cal., E. E. Clark, Ia., J. S. Harlan, Ill., B. H. Meyer, Wis., C. C. McChord, Ky. E. A. Moseley, Secretary. $5,000. The regulating statutes apply to interstate traffic only. Traffic transported wholly within a single state is excepted.

Civil Service Commission. Commissioners, J. C. Black, Ill., Chairman. $4,500; J. A. McIlhenny, La. $4,000; W. S. Washburn, N. Y. $4,000. Charged with the conduct of competitive examinations of applicants for the classified civil service.

Government Printing Office. Public Printer, S. B. Donnelly, N. Y. $5,500.

Charged with the printing, press work, and binding of all Government publications of every description.

Isthmian Canal Commission. Chairman and Chief Engineer, Col. George W. Goethals, assisted by five army officers as commissioners. $15,000, inclusive of army pay. Secretary, Joseph Bucklin Bishop, N. Y. $5,000. Charged with the construction of the Panama Canal.

The Library of Congress. Librarian. Herbert Putnam, Mass. $6,000. Primarily a reference library, composed of numerous collections, presented and bought. It is the third largest collection in the world. Under the jurisdiction of Congress.

Tariff Board. Chairman, Henry C. Emery, Conn.; James B. Reynolds, Mass.; Alvin H. Sanders, Ill.; Statistician, N. I. Stone, D. C.

Commission of Fine Arts, established 1910, to pass upon sites and plans for future buildings, monuments, etc., in the District of Columbia. No compensation, but actual expenses allowed. Chairman, Daniel H. Burnham, Ill.; Frederick Law Olmsted, Jr., Mass., landscape architect; Thomas Hastings, N. Y., architect; Daniel C. French, N. Y., sculptor; Frank D. Millet, N. Y., painter; Cass Gilbert, N. Y., architect; Charles Moore, Mich.; Secretary, Col. Spencer Cosby, D. C. (See XXXI, *Architecture.*)

THE SIXTY-FIRST CONGRESS

The Sixty-first Congress was called in extra session by President Taft, on March 15, 1909; the Payne tariff bill was introduced March 17, and on Aug. 9 the conference report on the tariff bill was signed by the President. (See XII, *Public Finance.*)

Congress convened in regular session Dec. 6, and adjourned on June 25. At this session more general legislation of importance was enacted than at any previous session of Congress since the days of reconstruction. Following are the more important laws of the Sixty-first Congress:

An act revising the tariff, establishing a maximum and minimum tariff and creating a court of customs; also creating a tariff board to be appointed by the President to aid him in ascertaining for the use of Congress the cost of manufacturing in the United States and abroad. An appropriation of $275,000 was made at the second session to continue the work of the tariff board for the ensuing year.

An act to establish a court of commerce for the trial of railroad cases on appeal from decisions of the Interstate Commerce Commission; and for the revising of the laws for the regulation of interstate commerce. This act for the first time extends the jurisdiction of the Interstate Commerce Commission over interstate telephone, telegraph, and cable lines.

An act creating a commission to investigate railroad stock and bond issues and to devise a law for the federal supervison of such railroad securities.

An act to establish postal savings banks, under which local postoffices may be made depositories for the receipt of local savings. (See XII, *Public Finance.*)

An act establishing a bureau of mines in the Department of the Interior, which shall have special charge over measures for the safety of employees in mines.

An act to give the President authority for the withdrawal of public lands for conservation purposes until such withdrawal is revoked by Congress. (See XI, *Conservation.*)

An act to suppress the interstate traffic in women for immoral purposes, known as the "white slave" traffic.

An act creating the two new states of Arizona and New Mexico out of the territories of the same names. (See VIII, *Territories and Dependencies.*)

An appropriation for raising the wreck of the *Maine* in the harbor of Havana, and for the proper burial of bodies found, in Arlington Cemetery.

An act transferring the control of the light house service of the Government from the charge of a naval officer to the control of civilian officials.

An act authorizing the issue of $20,000,000 in certificates to complete the execution of authorized reclamation projects. (See XI, *Public Resources.*)

Acts to increase the efficiency in organization of the army and navy, and authorizing joint maneuvers of army and state militia. (See XIII, *Military and Naval.*)

An act providing for the publicity of campaign contributions made in federal elections. (See VI, *Corrupt Practices.*)

A joint resolution authorizing the appointment of a commission of five members to consider the expediency of utilizing existing national agencies for the purpose of limiting the armaments of the nations by international agreement, and constituting the combined navies of the world an international force for the preservation of universal peace. (See IV, *International Relations.*)

An act to establish a national Commission of Fine Arts. (See XXXI, *Architecture.*)

An act to require common carriers engaged in interstate and foreign commerce, to make full reports of all accidents to the Interstate Commerce Commission.

An act to license custom-house brokers.

An act to parole United States prisoners.

An act amending the national bankruptcy act.

An act compelling common carriers to equip cars with automatic couplers and continuous brakes.

A joint resolution for a commission to investigate the matter of employer's liability and workman's compensation.

Among pending measures which failed of enactment were the anti-injunction bill, the ship subsidy bill, a bill for the creation of a new federal department combining all the health and sanitary services of the Government, and acts proposed by the Administration to classify public lands, grant federal control of water-power sites, and to provide terms for the federal leasing of mineral lands.

THE SPEAKERSHIP

Joseph Gurney Cannon, representing the Eighteenth District of Illinois, was elected to the Forty-third Congress, and has been elected to every subsequent Congress except the Fifty-second. After long service as Chairman of the powerful Committee on Appropriations, Mr. Cannon was elected Speaker of the Fifty-eighth Congress, and reëlected Speaker of the Fifty-ninth, Sixtieth and Sixty-first Congresses, covering a period of eight successive years—a longer service than that of any speaker since the foundation of the Government, and a longer period than that covered by any English ministry in the last thirty-five years.

A significant and far-reaching change was effected in the rules of the House of Representatives, and in the Speaker's control over legislation and the order of business, during the second session of the Sixty-first Congress. The rules of procedure had been in existence for many years, without material modification, under both republican and democratic control, being commonly known as the "Reed Rules," as compiled and adopted during the speakership of the late Thomas B. Reed of Maine. These rules concentrated great power in the Speaker, but it has always been the contention of those favoring them, that in the increasing size of the House, and the increasing pressure of important legislation, this concentration of control is essential to the effective and orderly discharge of business in accordance with the program of the party responsible for legislation. On the other hand, there has been growing complaint that the individual legislator, unless he be one of the dominating factors by reason of long service and great ability, is unable to secure consideration for measures deemed vital by his constituents. This feeling took the form of an organized revolt against the present Speaker, which included that group of members who have come to be known as "insurgents," and whose lack of alignment with the majority of their associates was made evident during the framing and passage of the tariff act at the extra session of the Sixty-first Congress. On March 16, Judge Crumpacker of Indiana, Chairman of the Census Committee, had moved the immediate consideration of a bill amending the Census act; Speaker Cannon ruled the motion in order, notwithstanding the rule of the House setting aside Wednesdays for the consideration of the calendar, because the constitutional requirement for a census gave the motion the character of highest privilege. Against this decision thirty-five so-called "insurgent" republicans joined with the democrats, overruling it. On the following day Representative Norris, of Nebraska, offered a resolution for the reorganization of the House Committee on Rules, claiming that it involved a question of the highest privilege. The Speaker ruled the motion not in order, and after a parliamentary wrangle which lasted throughout the night, Speaker Cannon was overruled, by a vote of 191 to 155, and the new rule adopted. This rule provides that the Committee on Rules, heretofore consisting of five members appointed by the Speaker, with the Speaker as Chairman, shall hereafter consist of ten members, six republicans and four democrats, to be appointed by the House, and with the proviso that the Speaker shall not be a member. The rule was adopted by the same combination of votes. Speaker Cannon announced that he would entertain a motion to declare the chair vacant; and such a motion, made by Mr. Burleson of Texas, was supported by all the democrats present, but by only nine of the "insurgent" republicans, and was lost. Later, the members of both parties held caucuses, and named their representatives on the new rules committee, all of whom were subsequently elected. The Chairman of the Committee is Hon. John Dalzell, of Pittsburg, the Speaker's immediate representative on the old committee. Under this new rule, the absolute control over the procedure of the House, formerly resting in the Speaker, passes to the House itself, and the Speaker's control over the business of the House rests in the authority he exercises as its presiding officer.

In the closing days of the session another resolution was proposed and adopted by the same combination, by which it will be in order, under certain limitations, for any member to move that any committee may be discharged from the further consideration of any bill upon which it has failed to take action for a period of time—which it has in fact "pigeonholed," and that the House, upon the adoption of the motion, may proceed to the consideration of the measure. It was held by the supporters of the Speaker that this right existed under the old rules; but its exercise was dependent upon the discretion of the Speaker.

That these new rules greatly modify the power of the Speaker is beyond question; nevertheless, his authority still remains very great, largely owing to the right to make the original appointment of committees, in the hands of the chairmen of about twenty of which, coöperating with the Speaker and a majority of the House, lies the control of the great bulk of legislative business. A further modification of the rules is therefore under consideration by some, at least, of the insurgents, under which the appointment of the committees would be intrusted to a "committee on committees," to be named by the majority of the House. Commenting upon this possible change in the rules, Asher C. Hinds, long the parliamentary clerk of the House, and elected a member of the next Congress from the first Maine district, says: "Should the Speaker be stripped of whatever power the rules still give him, that power would merely be placed somewhere else, and wherever it resided, criticism would follow." (See VI, *The Speakership.*)

THE SIXTY-SECOND CONGRESS

THE SENATE

[The terms of thirty Senators expire Mar. 3, 1911, and their successors have been or will be elected during the present winter. In the list below is shown whether the legislatures are Republican or Democratic in their political majority.

It is expected that the Senate of the Sixty-second Congress will consist of fifty-one Republicans and forty-one Democrats, a Republican majority of ten. The Republican majority in the Senate of the Sixty-first Congress is twenty-four.

Senators are elected by the state legislatures for a term of six years. Salary, $7,500 per year and mileage.]

[Republicans in Roman; Democrats in *italics*.]

ALABAMA

Term Expires

1915. *Jos. F. Johnston.*
1913. *John H. Bankhead.*

ARKANSAS

1915. *James P. Clarke.*
1913. *Jefferson Davis.*

CALIFORNIA

Term Expires
1915. George C. Perkins.
1917. A Republican.

COLORADO

1915. *Chas. J. Hughes, jr.*
1913. Simon Guggenheim.

CONNECTICUT

1915. Frank B. Brandegee.
1917. A Republican.

DELAWARE

1913. Harry A. Richardson.
1917. A Republican.

FLORIDA

1915. *Duncan U. Fletcher.*
1917. A Democrat.

GEORGIA

1915. A Democrat.
1913. *Augustus O. Bacon.*

IDAHO

1913. Wm. E. Borah.
1915. Weldon B. Heyburn.

ILLINOIS

1913. Shelby M. Cullom.
1915. William Lorimer.

INDIANA

1915. *Ben. F. Shively.*
1917. A Democrat.

IOWA

1915. A. B. Cummins.
1913. A Republican.

KANSAS

1915. Joseph L. Bristow.
1913. Charles Curtis.

KENTUCKY

1913. *T. H. Paynter.*
1915. Wm. O. Bradley.

LOUISIANA

1913. *Murphy J. Foster.*
1915. *John R. Thornton.*

MAINE

1913. Wm. P. Frye.
1917. A Democrat.

MARYLAND

1915. *John W. Smith.*
1917. *Isidor Rayner.*

MASSACHUSETTS

1913. W. Murray Crane.
1917. A Republican.

MICHIGAN

1913. W. A. Smith.
1917. Charles E. Townsend.†

MINNESOTA

1913. Knute Nelson.
1917. A Republican.

MISSISSIPPI

Term Expires
1913. *LeRoy Percy.*
1917. *John Sharp Williams.*

MISSOURI

1915. *William J. Stone.*
1917. A Democrat.

MONTANA

1913. Joseph M. Dixon.
1917. A Democrat.

NEBRASKA

1913. Norris Brown.
1917. *Gilbert M. Hitchcock.*†

NEVADA

1915. *Francis G. Newlands.*
1917. A Republican.

NEW HAMPSHIRE

1913. Henry E. Burnham.
1915. Jacob H. Gallinger.

NEW JERSEY

1913. F. O. Briggs.
1917. *James E. Martine.*†

NEW YORK

1915. Elihu Root.
1917. A Democrat.

NORTH CAROLINA

1913. *Furnifold McL. Simmons.*
1915. *Lee S. Overman.*

NORTH DAKOTA

1915. [The Republican Legislature will elect two senators in place of Porter J. McCumber, Republican, term expiring, and William E. Purcell, Democrat, serving by appointment.]
Alse J. Gronna.†

OHIO

1915. Theodore E. Burton.
1917. A Democrat.

OKLAHOMA

1915. *Thos. P. Gore.*
1913. *Robt. L. Owen.*

OREGON

1913. Jonathan Bourne, Jr.
1915. *George E. Chamberlain.*

PENNSYLVANIA

1915. Boies Penrose.
1917. A Republican.

RHODE ISLAND

1913. George Peabody Wetmore.
1917. A Republican.

SOUTH CAROLINA

1913. *Benj. R. Tillman.*
1915. *Ellison D. Smith.*

SOUTH DAKOTA

1915. Coe I. Crawford.
1913. Robt. J. Gamble.

TENNESSEE

Term Expires
1913. *Robt. L. Taylor.*
1917. A Democrat.

TEXAS

1913. *Jos. W. Bailey.*
1917. A Democrat.

UTAH

1915. Reed Smoot.
1917. A Republican.

VERMONT

1915. William P. Dillingham.
1917. Carroll S. Page.

VIRGINIA

1913. *Thomas S. Martin.*
1917. A Democrat.

WASHINGTON

1915. Wesley L. Jones.
1917. Miles Poindexter.†

WEST VIRGINIA

1913. Stephen B. Elkins.
1917. A Democrat.

WISCONSIN

1915. Isaac Stephenson.
1917. Robert M. La Follette.†

WYOMING

1913. Francis E. Warren.
1917. A Republican.

† Nominated by the State primaries.

HOUSE OF REPRESENTATIVES

[Republicans in roman (163); Democrats in *italic* (227); Socialist in SMALL CAPS (1). Those marked * served in the Sixty-first Congress. Those marked † served in a previous House. Whole number, 391. Democratic majority, 63.]

ALABAMA

1. *George W. Taylor.**
2. *S. H. Dent, Jr.**
3. *Henry D. Clayton.**
4. *F. L. Blackman.*
5. *J. Thomas Heflin.**
6. *Richmond Pearson Hobson.**
7. *John L. Burnett.**
8. *William Richardson.**
9. *Oscar W. Underwood.**

ARKANSAS

1. *Robert Bruce Macon.**
2. *William A. Oldfield.**
3. *John C. Floyd.**
4. *Ben Cravens.**
5. *H. M. Jacoway.*
6. *Joe T. Robinson.**
7. *W. S. Goodwin.*

CALIFORNIA

1. *John E. Raker.*
2. William Kent.
3. Joseph R. Knowland.*
4. Julius Kahn.*
5. Everis A. Hayes.*
6. James Carson Needham.*
7. William D. Stephens.
8. Sylvester C. Smith.*

COLORADO

AT LARGE—*Edward T. Taylor.**
1. *Atterson W. Rucker.**
2. *John A. Martin.**

CONNECTICUT

AT LARGE—John Q. Tilson.*
1. E. Stevens Henry.*
2. *Thomas L. Riley.*
3. Edwin W. Higgins.*
4. Ebenezer J. Hill.*

DELAWARE

AT LARGE

William H. Heald.*

FLORIDA

1. *Stephen M. Sparkman.**
2. *Frank Clark.**
3. *Dannitte H. Mays.**

GEORGIA

1. *Charles G. Edwards.**
2. *S. A. Roddenbery.**
3. *Dudley M. Hughes.**
4. *William C. Adamson.**
5. *William S. Howard.*
6. *Charles L. Bartlett.**
7. *Gordon Lee.**
8. *Samuel J. Tribble.*
9. *Thomas M. Bell.**
10. *Thomas W. Hardwick.**
11. *William G. Brantley.**

IDAHO

Burton L. French.†

ILLINOIS

1. Martin B. Madden.*
2. James R. Mann.*
3. William W. Wilson.*
4. *James T. McDermott.**
5. *Adolph J. Sabath.**
6. *Edmund T. Stack.*
7. *Frank Buchanan.*
8. *Thomas Gallagher.**
9. *Lynden Evans.*
10. George Edmund Foss.*
11. Ira C. Copley.
12. Charles E. Fuller.*
13. John C. McKenzie.*
14. James McKinney.*
15. George W. Prince.*
16. *Claude U. Stone.*
17. John A. Sterling.*
18. Joseph G. Cannon.*
19. William B. McKinley.*
20. *Henry T. Rainey.**
21. *James M. Graham.**
22. Wm. A. Rodenberg.*
23. *Martin D. Foster.**
24. *H. Robert Fowler.*
25. Napoleon B. Thistlewood.*

INDIANA

1. _John W. Boehne._*
2. _William A. Cullop._*
3. _William E. Cox._*
4. _Lincoln Dixon._*
5. _Ralph W. Moss._*
6. _Finley P. Gray._
7. _Charles A. Korbly._*
8. _John A. M. Adair._*
9. _Martin A. Morrison._*
10. Edgar D. Crumpacker.*
11. _George W. Rauch._*
12. _Cyrus Cline._*
13. _Henry A. Barnhart._*

IOWA

1. Charles A. Kennedy.*
2. _I. S. Pepper._
3. Charles E. Pickett.*
4. Gilbert N. Haugen.*
5. James W. Good.*
6. N. E. Kendall.*
7. S. F. Prouty.
8. H. M. Towner.
9. Walter I. Smith.*
10. Frank P. Woods.*
11. Elbert H. Hubbard.*

KANSAS

1. Daniel R. Anthony, Jr.*
2. A. C. Mitchell.
3. Philip P. Campbell.*
4. Frederick S. Jackson.
5. R. R. Reese.
6. I. D. Young.
7. E. H. Madison.*
8. Victor Murdock.*

KENTUCKY

1. _Ollie M. James._*
2. _Augustus O. Stanley._*
3. _R. Y. Thomas, Jr._*
4. _Ben Johnson._*
5. _Swagar Sherley._*
6. _Arthur B. Rouse._
7. _James C. Cantrill._*
8. _Harvey Helm._*
9. _W. J. Fields._
10. John W. Langley.*
11. Caleb Powers.

LOUISIANA

1. _Albert Estopinal._*
2. _H. Garland Dupre._
3. _Robert F. Broussard._*
4. _John T. Watkins._*
5. _Joseph E. Ransdell._*
6. _Robert C. Wickliffe._*
7. _Arséne P. Pujo._*

MAINE

1. Asher C. Hinds.
2. _Daniel J. McGillicuddy._
3. _Samuel W. Gould._
4. Frank E. Guernsey.*

MARYLAND

1. _James Harry Covington._*
2. _Joshua F. C. Talbott._*
3. _George Konig._
4. _J. Charles Linthicum._
5. Thomas Parran.
6. _David J. Lewis._

MASSACHUSETTS

1. George P. Lawrence.*
2. Frederick H. Gillett.*
3. _John A. Thayer._
4. William H. Wilder.
5. Butler Ames.*
6. Augustus P. Gardner.*
7. Ernest W. Roberts.*
8. Samuel W. McCall.*
9. _William F. Murray._
10. _James M. Curley._
11. _Andrew J. Peters._*
12. John W. Weeks.*
13. William S. Greene.*
14. Robert O. Harris.

MICHIGAN

1. _Frank E. Doremus._
2. William W. Wedemeyer.
3. J. M. C. Smith.
4. Edward L. Hamilton.*
5. _Edwin F. Sweet._
6. Samuel W. Smith.*
7. Henry McMorran.*
8. Joseph W. Fordney.*
9. James C. McLaughlin.*
10. George A. Loud.*
11. Francis H. Dodds.*
12. H. Olin Young.*

MINNESOTA

1. Sidney Anderson.
2. _W. S. Hammond._*
3. Charles R. Davis.*
4. Frederick C. Stevens.*
5. Frank M. Nye.*
6. Charles A. Lindbergh.*
7. Andrew J. Volstead.*
8. Clarence B. Miller.*
9. Halvor Steenerson.*

MISSISSIPPI

1. _Ezekiel S. Candler, Jr._*
2. _H. D. Stephens._
3. _Benjamin G. Humphreys._*
4. _Thomas Upton Sisson._*
5. _S. A. Witherspoon._
6. _B. P. Harrison._
7. _William A. Dickson._*
8. _James William Collier._*

MISSOURI

1. _James T. Lloyd._*
2. _William W. Rucker._*
3. _Joshua W. Alexander._*
4. _Charles F. Booher._*
5. _William P. Borland._*
6. _Clement C. Dickinson._*
7. _Courtney W. Hamlin._*
8. _Dorsey W. Shackleford._*
9. _Champ Clark._*
10. Richard Bartholdt.*
11. Theron F. Catlin.
12. L. C. Dyer.

13. *Walter L. Hensley.*
14. *Joseph J. Russell.*†
15. *J. A. Daugherty.*
16. *Thomas L. Rubey.*

MONTANA

AT LARGE

Charles N. Pray.*

NEBRASKA

1. *John A. Maguire.**
2. *C. O. Lobeck.*
3. *James P. Latta.**
4. Charles H. Sloan.
5. George W. Norris.*
6. Moses P. Kinkaid.*

NEVADA

AT LARGE

Edward E. Roberts.

NEW HAMPSHIRE

1. Cyrus A. Sulloway.*
2. Frank D. Currier.*

NEW JERSEY

1. Henry C. Loudenslager.*
2. John J. Gardner.*
3. *Thomas J. Scully.*
4. Ira W. Wood.*
5. *William E. Tuttle, Jr.*
6. *William Hughes.**
7. *E. W. Townsend.*
8. *Walter I. McCoy.*
9. *Eugene F. Kinkead.**
10. *James A. Hamill.**

NEW YORK

1. *Martin W. Littleton.*
2. *George H. Lindsay.**
3. *James P. Maher.*
4. *Frank E. Wilson.*†
5. *William C. Redfield.*
6. William M. Calder.*
7. *John J. Fitzgerald.**
8. *Daniel J. Riordan.**
9. *Henry M. Goldfogle.**
10. *William Sulzer.**
11. *Charles V. Fornes.**
12. *Michael F. Conry.**
13. *Jefferson M. Levy.*†
14. *John J. Kindred.*
15. *Thomas G. Patten.*
16. *Francis Burton Harrison.**
17. *Henry George, Jr.*
18. *Stephen B. Ayres.*
19. John E. Andrus.*
20. Thomas W. Bradley.*
21. *Richard E. Connell.*
22. William H. Draper.*
23. Henry S. De Forest.
24. George W. Fairchild.*
25. *Theron Akin.*
26. George R. Malby.*
27. *Charles A. Talcott.*
28. Luther W. Mott.
29. Michael E. Driscoll.*
30. John W. Dwight.*
31. Sereno E. Payne.*
32. Henry G. Danforth.
33. *Edwin C. Underhill.*
34. James S. Simmons.*
35. *Daniel A. Driscoll.**
36. *Charles B. Smith.*
37. Edward B. Vreeland.*

NORTH CAROLINA

1. *John H. Small.**
2. *Claude Kitchin.**
3. *James M. Faison.*
4. *Edward W. Pou.**
5. *Charles M. Stedman.*
6. *Hannibal L. Godwin.**
7. *Robert N. Page.**
8. *R. L. Doughtin.*
9. *Edwin Y. Webb.**
10. *John M. Gudger.*†

NORTH DAKOTA

AT LARGE

L. B. Hanna.*
H. T. Helgeson.

OHIO

1. Nicholas Longworth.*
2. *Alfred G. Allen.*
3. *James M. Cox.**
4. *J. H. Goeke.*
5. *Timothy T. Ansberry.**
6. *Matthew R. Denver.**
7. *J. D. Post.*
8. Frank B. Willis.
9. *Isaac R. Sherwood.**
10. Robert M. Switzer.
11. *H. C. Claypool.*
12. Edward L. Taylor, Jr.*
13. *Carl C. Anderson.**
14. *William G. Sharp.**
15. *George White.*
16. *W. B. Francis.*
17. *William A. Ashbrook.**
18. *J. J. Whitaker.*
19. *E. R. Bathrick.*
20. Paul Howland.*
21. *R. J. Bulkley.*

OKLAHOMA

1. Bird S. McGuire.*
2. Dick T. Morgan.*
3. *James L. Davenport.*†
4. *Charles D. Carter.**
5. *Scott Ferris.**

OREGON

1. Willis C. Hawley.*
2. A. W. Lafferty.

PENNSYLVANIA

1. Henry H. Bingham.*
2. Joel Cook.*
3. J. Hampton Moore.*
4. Reuben O. Moon.*
5. *Michael Donohue.*
6. George D. McCreary.*
7. Thomas S. Butler.*
8. *Robert E. Diefenderfer.*
9. William W. Griest.*
10. John R. Farr.
11. Charles C. Bowman.

12. *Robert E. Lee.*
13. *John H. Rothermel.**
14. *George W. Kipp.*†
15. *William B. Wilson.**
16. *John G. McHenry.**
17. Benjamin K. Focht.*
18. Marlin E. Olmsted.*
19. Jesse L. Hartman.
20. Daniel F. Lafean.*
21. Charles E. Patton.
22. *Curtis H. Gregg.*
23. Thomas S. Crago.
24. Charles Matthews.
25. Arthur L. Bates.*
26. *A. Mitchell Palmer.**
27. J. N. Langham.*
28. Peter M. Speer.
29. Stephen G. Porter.
30. John Dalzell.*
31. James Francis Burke.*
32. Andrew J. Barchfeld.*

RHODE ISLAND

1. *George F. O'Shawnessy.*
2. George H. Utter.

SOUTH CAROLINA

1. *George S. Legare.**
2. *James T. Byrnes.*
3. *Wyatt Aiken.**
4. *Joseph T. Johnson.**
5. *David E. Finley.**
6. *J. Edwin Ellerbe.**
7. *Asbury F. Lever.**

SOUTH DAKOTA

AT LARGE

Charles H. Burke.*
Eben W. Martin.*

TENNESSEE

1. Sam R. Sells.
2. Richard W. Austin.*
3. *John A. Moon.**
4. *Cordell Hull.**
5. *William C. Houston.**
6. *Joseph W. Byrns.**
7. *Lemuel P. Padgett.**
8. *Thetus W. Sims.**
9. *Finis J. Garrett.**
10. *George W. Gordon.**

TEXAS

1. *Morris Sheppard.**
2. *Martin Dies.**
3. *James L. Young.*
4. *Choice B. Randell.**
5. *Jack Beall.**
6. *Rufus Hardy.**
7. *Alexander W. Gregg.**
8. *John M. Moore.**
9. *George F. Burgess.**
10. *Albert S. Burleson.**
11. *Robert L. Henry.**
12. *Oscar Calloway.*
13. *John H. Stephens.**
14. *James L. Slayden.**
15. *John N. Garner.**
16. *William R. Smith.**

UTAH

AT LARGE

Joseph Howell.*

VERMONT

1. David J. Foster.*
2. Frank Plumley.*

VIRGINIA

1. *William A. Jones.**
2. *Edward E. Holland.*
3. *John Lamb.**
4. *R. Turnbull.**
5. *E. W. Saunders.**
6. *Carter Glass.**
7. *James Hay.**
8. *Charles C. Carlin.**
9. C. Bascom Slemp.*
10. *Henry D. Flood.**

WASHINGTON

1. William E. Humphrey.*
2. Stanton Warburton.
3. William LaFollette.

WEST VIRGINIA

1. *John W. Davis.*
2. *William G. Brown.*
3. *Adam C. Littlepage.*
4. *John M. Hamilton.*
5. James A. Hughes.*

WISCONSIN

1. Henry A. Cooper.*
2. John M. Nelson.*
3. Arthur W. Kopp.*
4. William J. Cary.*
5. Victor L. Berger.
6. *M. E. Burke.*
7. John J. Esch.*
8. James H. Davidson.*
9. Gustav Küstermann.*
10. E. A. Morse.*
11. Irvine L. Lenroot.*

WYOMING

Frank W. Mondell.*

THE FEDERAL JUDICIARY

The United States Supreme Court.—Three vacancies have occurred in the Supreme Court by death, since the term of the present administration began. Horace Harmon Lurton, of Tennessee, was appointed Dec. 13, 1909, to the vacancy created by the death of Justice Rufus W. Peckham, of New York. Charles E. Hughes, Governor of New York, was appointed, April 25, 1910, to succeed Justice David J. Brewer, of Kansas. Justice Hughes took office Oct. 1, 1910. Chief Justice Fuller, appointed by Pres. Cleveland in 1888, died July 4, 1910. Justice Edward D. White was appointed as his successor Dec. 12, 1910. An act of Congress permitted Justice William H. Moody, of Massachusetts, who has been incapacitated by illness for several years, to retire on full pay, prior to Dec., 1910. He resigned Nov. 22, 1910, and Willis Van Devanter, of Wyoming, was appointed his successor. Judge Joseph Rucker Lamar, of Georgia, was appointed successor to Justice White. Thus three of the nine justices of the Supreme Court are new members to pass upon the Tobacco Trust and Standard Oil cases now pending, and involving the final interpretation to be placed upon certain clauses of the Sherman Antitrust Act. These cases were fully argued before the court in the spring of 1910. After the death of Justice Brewer, the court gave notice that there would be a rehearing in these cases. The rehearing of these cases was set for Jan. 3, 1911. Solicitor-General Lloyd W. Bowers, who tried the cases for the Government, died Sept. 9, 1910.

UNITED STATES SUPREME COURT

	Born.	App.
Chief Justice, Edward D. White, of Louisiana. Salary, $13,000.	1845	1894
John M. Harlan, of Kentucky	1833	1877
Joseph McKenna, of California	1843	1898
Oliver W. Holmes, of Mass.	1841	1902
William R. Day, of Ohio	1849	1903
Horace H. Lurton, of Tenn.	1844	1909
Charles E. Hughes, of New York	1862	1910
Willis Van Devanter, of Wyo.	**1859**	**1910**
Joseph Rucker Lamar, of Ky.	**1857**	**1910**
Term of office—For life. Salary, $12,500.		
Clerk, J. H. McKenney, D. C.		6,000
Marshal, J. M. Wright, Kentucky		3,500
Reporter, Chas. H. Butler, New York		4,500

United States Circuit Courts of Appeals.—The act of March 3, 1891, provides that the chief justice and the associate justices of the Supreme Court assigned to each circuit, and the circuit judges within each circuit, and the several district judges within each circuit, shall be competent to sit as judges of the Circuit Court of Appeals within their respective circuits.

United States Circuit Courts.—There are nine circuit courts in the United States, each presided over by a member of the Supreme Court, with three and four circuit or district judges. The salary of circuit judges is $7,000.

United States District Courts.—There are eighty-three United States district judges, of whom five are located in Greater New York. Additional district judges were authorized in 1910 for Maryland, the northern district of Ohio, the southern district of Ohio, and the eastern district of New York. The salary of district judges is $7,000.

Circuit and District Judges.—The following table shows the nine judicial circuit districts of the United States courts, together with the names of the district and circuit judges residing in each. The assignment of supreme court justices to the several circuits has not yet been made.

First Circuit:
  Circuit judges: Le Baron B. Colt, William L. Putnam, Francis C. Lowell.
  District judges: Maine, Clarence Hale; Massachusetts, Frederic Dodge; New Hampshire, Edgar Aldrich; Rhode Island, Arthur L. Brown.
Second Circuit:
  Circuit judges: E. Henry Lacombe, Alfred C. Coxe, Henry G. Ward, Walter C. Noyes.
  District judges: Connecticut, James P. Platt; New York (northern), George W. Ray; New York (southern), George B. Adams, George C. Holt, Chas. M. Hough, Learned Hand; New York (eastern), Thomas Ives Chatfield; New York (western), John R. Hazel; Vermont, James L. Martin.
Third Circuit:
  Circuit judges: George Gray, Joseph Buffington, William M. Lanning.
  District judges: Delaware, Edward G. Bradford; New Jersey, Joseph Cross, John Rallstab; Pennsylvania (eastern), John B. McPherson, James B. Holland; Pennsylvania (middle), —— ——; Pennsylvania (western), James S. Young, Chas. P. Orr.
Fourth Circuit:
  Circuit judges: Nathan Goff, Jeter C. Pritchard.
  District judges: Maryland, Thomas J. Morris, John C. Rose; North Carolina (eastern), Henry G. Connor; North Carolina (western), Jas. Edmund Boyd; South Carolina, William H. Brawley; Virginia (eastern), Edmund Waddill, Jr.; Virginia (western), H. Clay McDowell; West Virginia (northern), Alston G. Dayton; West Virginia (southern), Benjamin F. Keller.
Fifth Circuit:
  Circuit judges: Don A. Pardee, Andrew P. McCormick, David D. Shelby.

District judges: Alabama (northern), William I. Grubb; Alabama (middle and northern), Thomas G. Jones; Alabama (southern), Harry T. Toulmin; Florida (northern), Wm. B. Sheppard; Florida (southern), James W. Locke; Georgia (northern), William T. Newman; Georgia (southern), Emory Speer; Louisiana (eastern), Rufus E. Foster; Louisiana (western), Aleck Boarman; Mississippi (northern and southern), Henry C. Niles; Texas (northern), Edward R. Meek; Texas (southern), Waller T. Burns; Texas (eastern), Gordon Russell; Texas (western), Thomas S. Maxey.

Sixth Circuit:

Circuit judges: Henry F. Severens, John W. Warrington, Loyal E. Knappen.

District judges: Kentucky (eastern), A. M. J. Cochran; Kentucky (western), Walter Evans; Michigan (eastern), Henry S. Swan; Michigan (western), Arthur C. Denison; Ohio (northern), John M. Killits; Ohio (southern), John E. Sater, Howard C. Hollister; Tennessee (eastern and middle), Edward T. Sanford; Tennessee (western), John E. McCall.

Seventh Circuit:

Circuit judges: Peter S. Grosscup, Francis E. Baker, William H. Seaman, Christian C. Kohlsaat.

District judges: Illinois (northern), Kenesaw M. Landis, George A. Carpenter; Illinois (eastern), Francis M. Wright; Illinois (southern), J. Otis Humphrey; Indiana, Albert B. Anderson; Wisconsin (eastern), Joseph V. Quarles; Wisconsin (western), Arthur L. Sanburn.

Eighth Circuit:

Circuit judges: Walter H. Sanborn, —— —— William C. Hook, Elmer B. Adams.

District judges: Arkansas (eastern), Jacob Trieber; Arkansas (western), John H. Rogers; Colorado, Robert E. Lewis; Iowa (northern), Henry Thomas Reed; Iowa (southern), Smith McPherson; Kansas, John C. Pollock; Minnesota, Page Morris, Charles A. Willard; Missouri (eastern), David P. Dyer; Missouri (western), Arba S. Van Valkenburgh; Nebraska, William H. Munger, Thomas C. Munger; North Dakota, Charles F. Amidon; Oklahoma (eastern), Ralph E. Campbell; Oklahoma (western), John H. Cotteral; South Dakota, John E. Carland; Utah, John A. Marshall; Wyoming, John A. Riner; New Mexico, William H. Pope, chief justice; John R. McFie, associate justice; Frank W. Parker, associate justice; Ira A. Abbott, associate justice; Edward R. Wright, associate justice ; Merritt C. Mechem, associate justice; C. J. Roberts, associate justice.

Ninth Circuit:

Circuit judges: William B. Gilbert, Erskine M. Ross, William W. Morrow.

District judges: California (northern), John J. De Haven, William C. Van Fleet; California (southern), Olin Wellborn; Idaho, Frank S. Dietrich; Montana, Carl Rasch; Nevada, Edward S. Farrington; Oregon, Charles E. Wolverton, Robert S. Bean; Washington (eastern), Edward Whitson; Washington (western), Cornelius H. Hanford, George Donworth. Alaska: Thomas R. Lyons, Div. No. 1; Cornelius D. Murane, Div. No. 2; Edward E. Cushman, Div. No. 3; Peter D. Overfield, Div. No. 4. Arizona: Edward Kent, chief justice; Fletcher M. Doan, associate justice; John H. Campbell, associate justice; Edward M. Doe, associate justice; Ernest W. Lewis, associate justice. Hawaii: Alfred S. Hartwell, chief justice; Antonio Perry, associate justice; John T. De Bolt, associate justice; Henry E. Cooper, judge first circuit; Wm. L. Whitney, judge first circuit; Wm. J. Robinson, judge first circuit; Selden B. Kingsbury, judge second circuit; John A. Matthewman, judge third circuit; Charles F. Parsons, judge fourth circuit; J. Hardy, judge fifth circuit; Sanford B. Dole, United States district judge; Alexander G. M. Robertson, United States district judge.

Court of Claims:

Chief justice: Stanton J. Peelle, Indiana; Charles B. Howry, Mississippi; Fenton W. Booth, Illinois; Geo. W. Atkinson, West Virginia; Samuel S. Barney, Wisconsin.

Territorial Judges:

District judge—Alaska: Division No. 1, Thomas R. Lyons; Division No. 2, Cornelius D. Murane; Division No. 3, Edward E. Cushman; Division No. 4, Peter D. Overfield.

Supreme Court—Arizona: Chief justice, Edward Kent; Associate justices, Fletcher M. Doan, John H. Campbell, Ernest W. Lewis, Edward M. Doe.

Supreme Court—Hawaii: Chief justice, Alfred S. Hartwell; Associate justices, Antonio Perry. John T. De Bolt.

[a] Recess appointment.

Circuit Court—First circuit: Henry E. Cooper, Wm. L. Whitney, William J. Robinson; Second circuit, Selden B. Kingsbury; Third circuit, John A. Matthewman; Fourth circuit, Charles F. Parsons; Fifth circuit, J. Hardy. United States District judges (term six years), Sanford B. Dole, Alexander G. M. Robertson.

Supreme Court—New Mexico: Chief justice, William H. Pope, Roswell; Associate justices: John R. McFie, Santa Fe; Frank W. Parker, Las Cruces; Ira A. Abbott, Albuquerque; Merritt C. Mechem, Socorro; Edward R. Wright, Alamogordo; C. J. Roberts, Las Vegas.

Supreme Court—Porto Rico: Chief justice, José C. Hernandez y Usera; Associate justices, James H. McLeary, Adolf Grant Wolf, Emilio del Toro y Cuevas; United States district judge, John J. Jenkins; Attorney-general, Foster V. Brown.

Judges of the District of Columbia:

Court of Appeals: Chief justice, Seth Shepard; Associate justices, Charles H. Robb, Josiah A. Van Orsdel.

Supreme Court: Chief justice, Harry M. Clabaugh; Associate justices, Job Barnard, Thomas H. Anderson, Ashley M. Gould, Daniel Thew Wright, Wendell P. Stafford.

Commerce Court.—A court to be known as the Commerce Court, and having jurisdiction (heretofore possessed by circuit courts) over all cases for the enforcement of any order of the interstate commerce commission, other than for the payment of money, was established by Congress in 1909. All cases brought to enjoin, set aside, annul or suspend any order of the commission, and all mandamus proceedings that are authorized to be maintained in a circuit court, are under its jurisdiction. The Commerce Court sits in Washington. Its members are additional circuit judges, with a salary of $7,000 each. They were appointed Dec. 12th as follows:

Martin A. Knapp, formerly chairman of the Interstate Commerce Commission, for five years.

Robert W. Archbald, formerly United States District Judge for the middle district of Pennsylvania, four years.

William H. Hunt, formerly a judge of the Court of Customs Appeals, formerly United States District Judge of the District of Montana, three years.

John Emmett Carland, of South Dakota, for two years.

Julian W. Mack, formerly judge in the Appellate Circuit Court of the First Illinois District, one year.

Court of Customs Appeals.—The tariff act of 1909 created a new court to hear appeals in custom cases to be called the Court of Customs Appeals, which has been constituted as follows:

Presiding judge: Robert M. Montgomery, Michigan.

Associate judges: William H. Hunt, Montana (since appointed member of Commerce Court); James F. Smith, California; Orion M. Barber, Vermont; Marion De Vries, California.

THE DIPLOMATIC SERVICES

ACCREDITED BY UNITED STATES.		ACCREDITED TO UNITED STATES			
		AMBASSADORS			
Country.		Appointed from			Date of Com.
Austria-Hungary	Richard C. Kerens.	Mo.	1909.	Baron Hengelmüller von Hengervár.	1902
Brazil	Irving B. Dudley.	Cal.	1906.		
France	Robert Bacon.	N. Y.	1909.	J. J. Jusserand.	1903
Germany	David J. Hill.	N. Y.	1908.	Count J. H. von Bernstorff.	1908
Great Britain	Whitelaw Reid.	N. Y.	1905.	Rt. Hon. James Bryce.	1907
Italy	John G. A. Leishman.	Pa.	1909.	Marquis Cusani-Confalioneri.	1910
Japan	Thomas J. O'Brien.	Mich.	1907.	Baron Yasuya Uchida.	1909
Mexico	Henry Lane Wilson.	Wash.	1909.	Señor Don Francisco Léon de la Barra.	1909
Russia	Wm. Woodville Rockhill.	D. C.	1909.	Baron Rosen.	1905
Turkey	Oscar S. Straus.	N. Y.	1909.	Toussouf Zia Pacha.	1910
		MINISTERS PLENIPOTENTIARY			
Argentine Republic	Charles H. Sherrill.	N. Y.	1909.	Señor Don Epifanio Portela.	1905
Belgium	Charles Page Bryan.	Ill.	1909.	Count Conrad de Buisseret.	1909

Country.		Appointed from			Date of Com.
Bolivia	Horace G. Knowles.	Del.	1910.	Señor Don Ignacio Calderon.	1904
Chile	Henry P. Fletcher.	Pa.	1909.	Señor Don Anibal Cruz, died Dec. 17, 1910.	1908
China	Wm. James Calhoun.	Ill.	1909.	Mr. Chang Yin Tang.	1909
Colombia	Elliott Northcott.	W.Va.	1909.	Señor Don Francisco de P. Borda.	1910
Costa Rica	Wm. L. Merry.	Cal.	1897.	Don Joaquin Bernardo Calvo.	1899
Cuba	John B. Jackson.	N. J.	1909.	Dr. Francisco Carrera y Jústiz.	1910
Denmark	Maurice Francis Egan.	D. C.	1907.	Count Moltke.	1908
Ecuador	Williams C. Fox.	N. J.	1907.	Señor Dr. Don Rafael Maria Arizaga.	1910
Greece & Montenegro	George H. Moses.	N. H.	1909.	Mr. L. A. Coromilas.	1906
Guatemala	R. S. Reynolds Hitt.	Ill.	1910.	Dr. Don Luis Toledo Herrarte.	1907
Haïti	Henry W. Furniss.	Ind.	1905.	Mr. H. Pauleus Sannon	1909
Honduras	Fenton R. McCreery.	Mich.	1909.	Dr. Luis Lazo.	1908
Morocco	Fred Warner Carpenter.	Cal.	1910.		
Netherlands & Luxemburg	Arthur M. Beaupre.	Ill.	1908.	Jonkheer J. Loudon.	1908
Nicaragua				Salvadore Castrillo.	1910
Norway	Herbert H. D. Peirce.	Mass.	1906.	M. H. A. Bryn.	1910
Panama	Thomas C. Dawson.	Ia.	1910.		
Persia	Charles W. Russell.	D. C.	1909.	Gen. Morteza Khan.	1905
Peru	Leslie Combs.	Ky.	1906.	Mr. Felipe Pardo.	1905
Portugal	Henry T. Gage.	Cal.	1910.		
Roumania and Servia	John R. Carter.	Md.	1909.		
Salvador	Wm. Heimke.	Kan.	1909.	Don Federico Mejia.	1907
Siam	Hamilton King.	Mich.	1903.	Phya Akharaj Varadhara.	1901
Spain	Henry Clay Ide.	Vt.	1909.	Señor Don Juan Riaño y Gayangoa.	1910
Sweden	Chas. H. Graves.	Minn.	1905.	Count J. J. A. Ehrensvard.	1910
Switzerland	Laurits S. Swenson.	Minn.	1909.	Dr. Paul Ritter.	
Uruguay and Paraguay	Edwin V. Morgan.	N. Y.		Dr. Luis Malian Lafinur.	1907
Venezuela			1909.	Don P. Ezequiel Rojas.	1909

Ministers Resident and Consuls-General

Abyssinia					
Dominican Republic	Wm. W. Russell.	Md.	1910.	Don Emilio C. Joubert.	1909
Liberia	Wm. D. Crum.	S. C.	1910.		

The Consular Service.—The consular service of the United States was reorganized by act of Congress of May 11, 1908. Under this reorganization there are fifty-seven consuls general, divided into seven classes, with salaries as follows:

Class 1	Salary	$12,000	One at London and at Paris.
“ 2	“	8,000	Six, located at Berlin, Habana, Hamburg, Hongkong, Rio de Janeiro, and Shanghai.
“ 3	“	6,000	Eight, located at Calcutta, Cape Town, Constantinople, Mexico City, Montreal, Ottawa, Vienna, and Yokohama.
“ 4	“	5,500	Twelve in all.
“ 5	“	4,500	Seventeen in all.
“ 6	“	3,500	Nine in all.
“ 7	“	3,000	Three in all.

Consuls.—The United States consuls are divided into nine classes, with salaries ranging from $8,000 down to $2,000. There is but one consul of Class 1 located at Liverpool, Eng., at a salary of $8,000, and but one Class 2, at Manchester, Eng., at a salary of $6,000.

There are in all 240 consuls, located in the principal cities of the various countries of the world, and there are, in addition, 282 consular agents.

THE CIVIL SERVICE AND CIVIL PENSIONS

Clinton Rogers Woodruff

THE CIVIL SERVICE

There are approximately 370,000 federal positions, of which, on June 30, 1910, 234,940 were subject to the competitive system. For the last year reported upon by the Federal Civil Service Commission (1909), 16,560 employees and positions were transferred from the excepted to the competitive class by executive action.

Thirteen positions were transferred from the exempt to the competitive class by the action of Congress, and three hundred and forty-nine positions were automatically brought in to the latter class by the extension of the free delivery system to one hundred and twelve post-offices.

On Oct. 1 Pres. Taft ordered the classification of 8,000 assistant postmasters throughout the United States. There have been no important withdrawals from the classified service during 1910. On the other hand an instructive debate took place in the United States Senate in which a Republican Senator from Montana (Mr. Carter) declared that efficiency and the application of business principles to promotion in the post-office service, are more important to the country than the maintenance of senatorial patronage. "I would rather have a good postmaster," he said, "who was born somewhere else, than a poor postmaster born in the locality. The post-office department of the United States is a national institution and not a local institution. I believe that within a brief period of time, the post-office department will no longer be regarded as a football in the local political field of the country. I hope the time will soon come when it can be put upon a business basis." This is a most encouraging sign of the development of the demand for efficiency in governmental affairs. Moreover, the National Civil Service Reform League has pointed out that "into that stronghold of the spoils system the idea has penetrated that the creation of postmasters in the South for the sole purpose of controlling delegates to national conventions contains an element of danger to free institutions and is unworthy of the government of a great nation."

Fourth class postmasters in the New England States, New York, New Jersey, Pennsylvania, Ohio, Indiana, Illinois, Wisconsin and Michigan, make up 15,488 positions covered in the classified service by an order of Nov. 30, 1908. This order represents the beginning of the movement which will, no doubt, eventually include all the fourth class postmasters in the country.

There has been a lessening of administrative abuses during the year, especially of political activity on the part of federal employees in the competitive class, and an increasing sympathy and coöperation on the part of appointing officers. The decrease in political activity has taken place in spite of the fact that the number of cases of political activity in violation of the law and rules brought to the attention of the Commission during the year 1908-1909, was somewhat larger than that during the previous year. This was the natural result of a presidential campaign, and of the elections for state and municipal offices, which occurred at the same time. Another reason for a slight increase in such cases is the fact that as the rule restricting political activity becomes better known, and its purposes more widely understood, cases of its violation, many of them of a minor character, are reported to the Commission which previously would not have been brought to its attention. It is now becoming generally understood on the one hand, that competitive employees are protected from removal or discrimination on account of their political views, and on the other that they must refrain from activity in political affairs or management. When it is taken into consideration that the competitive classified service now includes more than a quarter of a million employees, the number of charges of improper activity in political affairs presented against persons in the competitive service is remarkably small.

Other recent events in the federal service of more than local or technical significance are: the increasing practice of filling positions requiring unusual executive qualifications, and positions of high fiduciary character by promotion or transfer, such as special treasury agents, and the cashiers in custom-houses and post-offices; the requirement for examinations for the diplomatic service similar to the system in force in the consular service; and the action of Congress in requiring the additional clerical force for the present census, to be appointed upon competitive examinations, conducted by the Civil Service Commission, and the action of the director of the census in prescribing competitive examinations for special census agents. The approval of the merit system by the American people is also evidenced in the platforms of the two great political parties, and its increasing adoption in states and cities.

State and Municipal Civil Service. —Since the introduction of the merit system into the federal service in 1883, according to the records of the Federal Commission, six states and nearly one hundred cities have adopted it. New York passed a civil service law in 1883, Massachusettes in 1884, Wisconsin in 1905, Illinois in 1905, Colorado in 1907, New Jersey in 1907, and Ohio, a law providing limited service for cities in 1908.

No new states have been added to the list the past year. An important decision by the New Jersey Court of Errors and Appeals early in 1910, declared unconstitutional the provision of the state civil service law permitting municipalities to adopt the act and the jurisdiction of the state civil service commission by resolution of their governing board, thus depriving all municipalities which had adopted it, of the benefits of the law. The provision for adoption by a referendum vote was upheld as constitutional, but no cities have so far adopted the merit system by this method.

An increasing number of efforts to secure the adoption of adequate civil-service laws are reported. The Pennsylvania Civil Service Reform Association is conducting an active campaign with the assistance of business bodies. At the Peoria, Ill., conference on the political situation in that state, civil service reform was strongly recommended. Robert Catherwood, president of the Chicago Civil Service Reform Association, declared that "the rottenness lately exposed in our state can indirectly be traced back to the spoils system of politics. While all the parties have ideal platforms embodying provisions for the elimination of this evil, the issue is always overlooked." An organization has been formed in California to advance the boundaries of the competitive system to take in state institutions. Michigan and Connecticut are also the scenes of efforts to secure good civil-service laws.

Forty-four cities of over fifty thousand population, now have a merit system, covering the municipal service in whole or in part.

In only two cities, Galveston and New Orleans, has the scope of the civil-service regulations become narrowed, or the law repealed. The new charter proposed for Baltimore contained adequate civil-service provisions. St. Louis's new charter commission will favor adequate civil-service provisions.

In Wheeling, W. Va., civil-service rules are applied to the fire and water departments under its new charter. Munice, Ind., at the demand of the Indiana fire insurance underwriters, has, by ordinance, adopted civil-service rules for the fire department.

Civil-service rules have been extended by the New York Commission, with the approval of Governor Hughes, to Niagara, Oneida, Orange, Ulster, Suffolk, Rensselaer, Nassau, and Chautauqua counties, bringing seventeen counties in New York State under the civil-service rules.

Colorado Springs and Grand Junction, Colo.; Leavenworth and Wichita, Kan.; Berkeley, Cal.; Tacoma, Wash.; Keokuk, Ia., in fact, nearly all the cities that have adopted commission forms of government, have also provisions for appointment by the competitive system, although they are seldom adequate.

In Cuba, the provisional Governor, Charles E. Magoon, as one of his last measures, decreed a strict and comprehensive civil-service law, on January 11, 1909, for the republic. This was one of the four special laws called for by the peace commission in 1906.

The civil-service provisions of the Payne law in Ohio, took effect on January 1, 1910, and civil-service commissioners were instituted in all the cities of the state.

By action of the State Civil Service Commission and Governor Hughes, a new departure has been made in New York by extending the merit system and jurisdiction of the State Civil Service Commission to the seven largest villages in the state.

Boston's new charter, under which Mayor Fitzgerald was elected in January, 1910, contains a unique provision that the mayor shall certify that the persons appointed by him as heads of departments, are qualified by education, training or experience for the position to be filled, and that the civil-service commission shall pass on the qualifications of the persons nominated by the mayor within thirty days. In case of failure to act, the appointment falls. Under this provision, thirty-seven nominations have been approved and thirteen have been rejected, mostly by permitting the thirty days to expire.

One of the most important examinations so far held under the merit system was that for librarian of the Chicago Public Library. It was successfully conducted and established a precedent which has been adopted in Kansas City, where the heads of important departments have been selected in the same manner. The federal service has also selected in the same way such places as examiners in the Interstate Commerce Commission.

In the view of experts, one of the important developments of recent years has been the increased number and variety of positions in the competitive class; such as several of the county and village governments in New York, fourth-class postmasters in fourteen states, and deputy marshals, and the extension of competition to positions requiring a high degree of professional, scientific, or technical qualifications, to which competition was formerly regarded as impracticable.

Kansas City has established some further precedents that are likely to prove of wide usefulness. The new commission appointed by Mayor Brown, began its examinations with the highest position of the several bureaus not exempted under the law. This policy was adopted because it was thought that it would obtain men having authority in each of the bureaus, who, being selected on the merit system, would be in entire sympathy with its purposes, and that it would result in more loyalty on the part of employees to their superior officers, if they knew the man in charge had already passed the test to which they later would be subjected, rather than the reverse. If the merit system is to be accepted heartily by the rank and file, they must be persuaded that it represents merit all along the line, rather than in spots, and that it applies to all, high and low alike. The commission adopted the idea of having for each group of examinations a committee of three experts to conduct the examination and grade papers. This is a wholesale adoption of the plan worked out by the Chicago Commission at the time it held its examination for librarian of the Public Library. Already some of the most efficient citizens have consented to serve on these committees. The exempt class is a small one, and the charter requires the eventual selection from the eligible lists of successors to the present officeholders, the examinations, however, being open to these.

CIVIL SERVICE PENSIONS

Superannuation.—The movement for the retirement of superannuated civil employees is growing in strength. In the federal service, Pres. Taft has declared in favor of some retirement provision as "a necessary concomitant" of the merit system. The measures received with most favor at the present time do not provide for a pension at the expense of the Government, but partake of the nature of compulsory insurance, each employee being compelled to provide against his own old age and retirement by regular contributions from his salary, the Government to undertake the administration and investment of these contributions. A bill applying this system to federal employees in the District of Columbia has been introduced by Congressman Gillett, chairman of the House Committee on Reform in the Civil Service and favorably reported. A plan of this kind has received the indorsement of the New York State Civil Service Commission and has been put forth as the best available plan by the Committee on Superannuation of the National Civil Service Reform League. No general pension or retirement legislation has been passed by the national or state legislatures during the past year.

To aid in the working out of a successful, practical plan of civil service pensions, the Federal Department of Commerce and Labor is bringing out a series of first-hand studies of the systems in vogue in other countries. The first volume, by Herbert D. Brown, deals with Civil Service Retirement in Great Britain and New Zealand. It will be followed by others on Austria-Hungary, Canada, France, Germany, and New South Wales.

The Mass. legislature authorized the appointment of a commission to inquire into the subject of old age insurance and pensions, which reported on Jan. 15, 1910. The bill which this commission recommended for the retirement of municipal and state employees, provided for contributions both by the employees and by the Government.

In England the superannuation act of 1834 provided allowances of from four to eight twelfths of salary, depending on the number of years served, for retired (male) civil employees. This was to be paid out of a fund raised by an annual abatement of two and one half per cent on salaries not exceeding £100, and five per cent on those above this amount. In 1858 the abatement section of the act was stricken out. In 1859 a pension scheme took its place. At first popular (though the pension rate was lower than under the older act) it soon became apparent that a noncontributory system was one only in name, and in reality meant a lowering of salaries. The employees ceased in time to regard the pension as a pure gratuity, but instead considered it a benefit paid by themselves out of reductions in salary, and subject to large chances of forfeiture through death or resignation. In 1902, 70,000 out of the 100,000 persons in the service formed the Deferred Pay Committee. This committee claimed not only that they were contributing their own pensions, but also enough more to entitle them to free life insurance. The first point was conceded by the commission appointed to investigate the matter, which denied, however, that there was any balance on hand for insurance.

In 1909, this old act was so modified that it provided a further lowering in the rate of the pension, the amount of which is determined by the salary of the last three years of service. It makes an allowance on a reduced scale—to cover "theoretical contribution"—for those who die (insurance), or who resign from the service before the age of retirement, as well as a reduced rate of superannuation payment for those who have continued to work after the age of sixty-five, designed to discourage work after that age.

Civil Service Conference.—A conference of civil service commissioners and examiners is held biennially. That for 1910 was held in Albany, N. Y., in June. It brings together the men charged with the practical administration of the law. Oral examination was the principal subject discussed at the last meeting. Joseph C. Mason, secretary of the Illinois State Civil Service Commission, Springfield, Ill., is president of the conference.

There is also held a biennial conference in Albany of the city commissioners of New York State. These conferences do on a small scale what the national conference does on a larger one.

Under the federal rules and regulations, political activity of employees is forbidden, as has been noted. Following this example, Cuba has adopted a stringent law. Municipal political activity laws and ordinances are few and far between. The Shern law, applying to Philadelphia, is perhaps the most complete, although it is inadequately enforced. New York and Boston have similar ordinances. Kansas City, Kan., Des Moines and Colorado Springs have within the past year passed and enforced ordinances forbidding employees to take part in politics, except to vote.

In some cities, notably in the West, the civil service commission is made a trial board for removals and discipline, following the Chicago system. In this way the commission gains cognizance of all kinds of charges. In some cases, notably in Los Angeles, they have taken cognizance of the charge of political activity and have punished it by removal and discipline in several cases. There is no statute or ordinance to support this. It is simply derived from the Commission's power to try employees on charges.

In New York, the legislature passed and, sad to relate, the governor approved, a bill extending the privileges now given to Civil War veterans, exempt firemen and volunteer Spanish War veterans, to *all* veterans of the Spanish War and the Philippine insurrection (volunteer or regular).

The president of the National Civil Service Reform League is Dr. Charles W. Eliot, president emeritus of Harvard University, and the secretary, Elliot H. Goodwin. Its offices are at 79 Wall Street, New York.

VIII. STATE AND COUNTY GOVERNMENT

JOHN A. FAIRLIE

THE STATES OF THE UNION

In the following series of tables the more important facts relative to the forty-six states which at present constitute the American Union are brought together for convenient reference:

1. The first table gives the area and population of the states, together with the date upon which they severally ratified the constitution of the United States, or upon which they were admitted to the Union. The population at 1900 and 1910 is given, together with the percentage of increase since 1900, and the rank of the several states in population in 1910.

The population of the continental United States at the thirteenth census, taken Apr. 15, 1910, was announced Dec. 10th as 91,402,151, an increase of 15,977,691 over the population on June 1, 1900, and an increase of 21 per cent as compared with an increase of 22.7 per cent in 1900. The states in which the population has increased more than 50 per cent include Oklahoma, New Mexico, Arizona, Nevada, Washington, Oregon, California, North Dakota, Montana, Wyoming, and Idaho. All these states are situated in the western half of the United States.

Including Alaska, Hawaii, Porto Rico, and military persons abroad, the population was 93,402,151. If the population of the Philippine Islands (7,635,426 in 1903) is added, with estimates for Guam, Samoa, and the Canal Zone, the total population of the United States and possessions is 101,100,000.

The new apportionment of state representatives in Congress will be based upon the population as given upon the following page.

2. The second table gives for each state the assessed valuation of property, as made in 1909; the total state indebtedness and the amount of sinking funds held against the same; the appropriations for the annual expenses of the state, which, in some cases, indicate the actual revenue of the year; and the total expenditures for the year. The data furnished in this table were courteously supplied by the treasurers or comptrollers of the several states.

3. The third table gives the facts in regard to the state constitutions; dates of adoption; methods of ratification of present and former constitutions; and the existing methods of amendment in each state.

4. The fourth table gives the state governors; their politics; the length of the governor's term in each state; the date of the beginning and ending of his term; and the governor's salary.

5. The fifth table indicates the main facts regarding the state judiciary; the name of the courts and number of judges; how chosen; length of term; and salary.

6. The sixth table indicates the number of counties in each state, and the general facts as to the county officers, their titles, which, as a rule, indicate their functions, and whether elected or appointed.

7. The seventh table presents the main features regarding the state legislatures, including the number of members of each house; length of the term; frequency of session; the limit upon duration of sessions, if any; and the salaries of members of both branches of the legislature.

8. An eighth table also appears, giving the receipts and payments of counties as returned to the Federal census, together with the general sources of the receipts and the purposes for which the payments were made.

VIII. STATE AND COUNTY GOVERNMENT

THE STATES OF THE UNION

Area, Population, Dates of Ratification, Organization and Order of Admission to the Union

	Ratification of Constitution.	Area.	1900, Population.	1910, Population.	Percentage of Increase 1900–1910.	Rank in Population 1910.
New Hampshire.	June 21, 1788	9,031	411,588	430,572	4.6	39
Massachusetts . .	February 6, 1788	8,039	2,805,346	3,366,410	20.0	6
Rhode Island . . .	May 29, 1790	1,067	428,556	542,610	26.6	38
Connecticut	January 9, 1788	4,820	908,420	1,114,756	22.7	31
New York	July 26, 1788	47,654	7,268,894	9,113,614	25.4	1
New Jersey	December 18, 1788	7,514	1,883,669	2,537,167	34.7	11
Pennsylvania . . .	December 12, 1787	44,832	6,302,115	7,665,111	21.6	2
Delaware	December 7, 1787	1,965	184,735	202,322	9.5	44
Maryland	April 28, 1788	9,941	1,188,044	1,294,450	9.0	27
Virginia	June 26, 1788	40,262	1,854,184	2,061,612	11.2	20
North Carolina . .	November 21, 1789	48,740	1,893,810	2,206,287	16.5	16
South Carolina . .	May 23, 1788	30,495	1,340,316	1,515,400	13.1	26
Georgia	January 2, 1788	58,725	2,216,331	2,609,121	17.7	10

	Date of Admission.	Area.	1900, Population.	1910, Population.	Percentage of Increase 1900–1910.	Rank in Population 1910.
Kentucky	February 4, 1791	40,181	2,147,174	2,289,905	6.6	14
Vermont	February 18, 1791	9,124	343,641	355,956	3.6	42
Tennessee	June 1, 1796	41,687	2,020,616	2,184,789	8.1	17
Maine	March 3, 1820	29,895	694,466	742,371	6.9	34
Texas	December 29, 1845	262,398	3,048,710	3,896,543	27.8	5
West Virginia . .	June 20, 1863	24,022	958,800	1,221,119	27.4	28
Ohio	April 30, 1802	40,740	4,157,545	4,767,121	14.7	4
Louisiana	April 8, 1812	45,409	1,381,625	1,656,388	19.9	24
Indiana	December 11, 1816	35,885	2,516,462	2,700,876	7.3	9
Mississippi	December 10, 1817	46,362	1,551,270	1,797,114	15.8	21
Illinois	December 3, 1818	56,002	4,821,550	5,638,591	16.9	3
Alabama	December 14, 1819	51,279	1,828,697	2,138,093	16.9	18
Missouri	March 2, 1821	68,727	3,106,665	3,293,335	6.0	7
Arkansas	June 15, 1836	52,525	1,311,564	1,574,449	66.2	25
Michigan	January 26, 1836	57,480	2,420,982	2,810,173	16.1	8
Florida	March 3, 1845	54,861	528,542	752,619	42.1	33
Iowa	December 28, 1846	55,586	2,231,853	2,224,771	.3	15
Wisconsin	May 29, 1848	55,256	2,069,042	2,333,860	12.7	13
California	September 9, 1850	156,092	1,485,053	2,377,549	60.1	12
Minnesota	May 11, 1858	80,858	1,751,394	2,075,708	18.5	19
Oregon	February 14, 1859	95,607	413,536	672,765	62.7	35
Kansas	January 29, 1861	81,774	1,470,495	1,690,949	15.0	22
Nevada	March 21, 1864	109,821	42,335	81,875	93.4	46
Nebraska	February 9, 1867	76,808	1,066,300	1,192,214	11.8	29
Colorado	March 3, 1875	103,658	539,700	799,024	48.0	32
North Dakota . .	February 22, 1889	70,183	319,146	577,056	80.8	37
South Dakota . .	February 22, 1889	76,868	401,570	583,888	45.4	36
Montana	February 22, 1889	145,776	243,329	376,053	54.5	40
Washington	February 22, 1889	66,836	518,103	1,141,990	120.4	30
Idaho	July 3, 1890	83,779	161,772	325,594	101.3	43
Wyoming	July 10, 1890	97,594	92,531	145,965	57.7	45
Utah	July 16, 1894	82,184	276,749	373,351	34.9	41
Oklahoma	November 16, 1907	69,414	790,391	1,657,155	109.7	23

Area.—The total area of continental United States, including Arizona and New Mexico, is 2,974,159 square miles. The total area including Alaska and Hawaii is 3,624,122 square miles. The area of Alaska is 590,884 square miles; of the Hawaiian Islands, 6,449 square miles; of the Philippine Islands, 115,026 square miles; and of Porto Rico, 34,035 square miles.

STATE INDEBTEDNESS, TAXATION, APPROPRIATIONS AND EXPENDITURES

	Assessed Value of Property, 1909.	Indebtedness.	Sinking Funds.	Appropriations.	Expenditures.
Alabama	$484,350,190	$9,057,000	....	$6,068,078*	$5,309,908
Arizona	82,684,062	956,972	$20,000	1,000,000	940,000
Arkansas	374,845,239	1,250,500	239,346	8,173,344*	5,076,556†
California	2,438,656,544	4,881,500	855,168	6,703,456	19,519,812†
Colorado	400,671,647	2,614,759	....	8,433,264*	5,619,194
Connecticut	922,071,592	874,100	....	6,221,776*	5,743,261
Delaware	86,306,694	826,785	31,000	1,595,436*	917,158
Florida	159,390,230	601,567	None	2,873,080*	2,382,240
Georgia	723,654,331	7,034,202	100,000 retired ann.	5,550,000	5,529,576
Idaho	120,815,434	1,750,000	400,000	1,000,000	1,000,000
Illinois	2,158,648,450	None	None	19,857,596†	19,857,000
Indiana	1,776,132,096	1,510,163	270,742	10,666,020*	10,135,744
Iowa	487,221,300	None	....	5,153,718*	4,149,803
Kansas	2,510,757,607	520,000	85,268	....	5,302,780
Kentucky	559,157,016	3,565,627	142,747	500,000†	6,592,399
Louisiana	523,800,478	11,108,300	None	4,102,345	4,019,454
Maine	428,212,465	698,000	....	3,965,385*	3,889,562
Maryland	820,831,339	6,718,926	538,300	6,638,757*	5,310,687
Massachusetts	4,770,558,822	110,520,162	30,863,095	14,640,532*	12,965,358
Michigan	1,734,100,000	None	None	15,026,112*	12,538,233
Minnesota	1,108,605,752	2,100,000	....	15,647,574	13,322,963
Mississippi	393,297,173	1,842,899	....	3,303,963*	3,128,863
Missouri	1,482,676,696	None	None	6,831,426†	5,298,301
Montana	280,401,046	864,000	283,546	1,302,305	1,203,086
Nebraska	398,990,000	None	216,000	5,203,000†	3,902,250
Nevada	79,610,202	122,000	....	1,678,382*	875,941
New Hampshire	249,219,335	1,293,209	....	1,791,285	1,662,694
New Jersey	1,949,687,287	None	None	5,445,861	7,774,615
New Mexico	63,724,839	993,000	19,800	1,085,923*	1,013,719
New York	9,822,251,554	57,258,160	24,158,490	34,494,429	38,180,715
North Carolina	493,889,202	7,200,000	248,000	3,695,108*	3,582,197
North Dakota	278,400,230	1,151,300	105,079	2,360,000†	1,259,105
Ohio	2,352,680,824	No bonded	....	9,340,607*	6,440,706
Oklahoma	868,126,700	1,460,000	....	5,631,159	2,349,111
Oregon	694,727,632	None	....	6,185,444†	5,527,124
Pennsylvania	5,361,177,610	2,643,917	2,652,034	52,000,000†	30,021,773
Rhode Island	511,630,520	4,800 000	654,999	2,444,147	2,345,359
South Carolina	271,106,302	6,698,274	800,045	1,928,553	1,346,808
South Dakota	321,070,665	835,425	....	1,423,401	1,248,008
Tennessee	444,186,729	11,458,100	63,081	4,883,792	4,441,908
Texas	2,306,648,129	3,978,200	None	4,658,099	4,364,607
Utah	172,526,155	900,000	....	3,291,587	2,850,674
Vermont	185,826,798	693,020	....	2,414,211†	1,822,882
Virginia	577,750,407	22,481,627	....	5,858,146	5,063,430
Washington	790,419,826	1,006,024	....	5,000,000	9,005,389
West Virginia	1,072,508,128	None	....	3,252,022*	2,973,033
Wisconsin	2,602,549,798	2,251,000	....	6,863,247*	5,170,175
Wyoming	186,157,274	120,000	....	1,542,595*	892,188

* Revenue. † Two years inclusive.

The figures included in the above table are the latest obtainable, and relate in most cases to the fiscal year ending in 1910. In some instances the figures are partly for that year, and partly for a prior year.

The New York Commercial and Financial *Chronicle* compiled a statement showing the total indebtedness of the states in 1909 to be $261,222,000, and the total indebtedness of cities and counties $2,552,761,000; grand total, $2,813,983,000. To this should be added the indebtedness of Hawaii, the Philippines, and Porto Rico, $25,131,000.

STATE CONSTITUTIONS.

STATE.	Date.	METHOD OF ADOPTION.		PRESENT METHOD OF AMENDMENT.			PRESENT METHOD OF GENERAL REVISION.	
		Framed by	Popular Ratification.	Proposed by	Limitations.	Popular Ratification.	Convention Called by	Popular Ratification.
Maine	1820	Convention.	Yes.					
	1875	Former Const. revised by C. J. and legis.		⅔ of each house.		Majority vote.	$^2/_3$ vote of legislature.	
New Hampshire	1776	Prov. Congress.	No.					
	1778	Convention.	Rejected.					
	1784	"	⅔ vote and revised by second Conv.				Popular vote every 7 years.	$^2/_3$ vote.
	1792	"						
Vermont	1777	Convention.	No.					
	1786	"	"					
	1793	Convention called by canvass.	"	Two successive legislatures.	Every 10th year.	Majority vote.		
Massachusetts	1778	General Court.	Rejected.					
	1780	Convention.	⅔ vote.					
		Amdts. 1–9 by Convention.	Yes.	"	$^2/_3$ vote of house.	"		
	1853	Convention.	Rejected.					
Rhode Island	1842	"	Yes.					
	1897	Commission and legislature.	Rejected.	"		$^3/_5$ vote.		
Connecticut	1818	Convention.	Yes.	House of Rep. and $^2/_3$ vote of each house in next legislature.				
	1902	"	Rejected.			Yes.		
New York	1777	Convention.	No.					
	1821	"	Yes.					
	1846	"	"					
	1867	"	Rejected					
	1894	"	Yes.	Two successive legislatures.		Majority vote.	Popular vote every 20 years.	Majority vote.
New Jersey	1777	"	No.					
	1844	"	Yes.	"	Once in 5 years.	"		
Pennsylvania	1776	"	No.					
	1790	"	"					
	1838	"	Yes.					
	1873	"	"	"	"	"		

STATE CONSTITUTIONS—*Continued*

State.	Date.	Method of Adoption.		Present Method of Amendment.			Present Method of General Revision.	
		Framed by	Popular Ratification.	Proposed by	Limitations.	Popular Ratification.	Convention Called by	Popular Ratification.
Delaware	1776	Convention.	No.	Two successive legislatures.	⅔ vote.	No.	⅔ vote of legislature and popular vote.	
	1792	"	"					
	1831	"	"					
	1897	"	"					
Maryland	1776	Convention.	No.	3/5 of members elected to each house.		Majority vote.	Popular vote every 20 years.	
	1851	"	Yes.					
	1864	"	"					
	1867	"	"					
Virginia	1776	"	No.	Two successive legislatures.		"	"	
	1830	"	Yes.					
	1850	"	"					
	1864	"	No.					
	1869	"	Yes.					
	1902	"	No.					
West Virginia	1862	"	Yes.	⅔ vote of each house.		"	Legislative and popular vote.	Majority vote.
	1872	"	"					
North Carolina	1776	A Congress.	No.	3/5 vote of each house.		"	⅔ of each house and popular vote.	
	1868	Convention.	Yes.					
	1875	"	"					
	1901	"						
South Carolina	1776	Prov. Congress.	No.	⅔ of members elected to each house.		Majority vote and majority of each house of next legislature.	"	
	1778	Gen. Assembly.	"					
	1790	Convention.	"					
	1865	"	"					
	1868	"	Yes.					
	1895	"	No.					
Georgia	1777	"	No.					
	1789	"	Second Conv.					
	1798	"	No.					

STATE CONSTITUTIONS—*Continued*

STATE.	Date.	METHOD OF ADOPTION.		PRESENT METHOD OF AMENDMENT.			PRESENT METHOD OF GENERAL REVISION.	
		Framed by	Popular Ratification.	Proposed by	Limitations.	Popular Ratification.	Convention Called by	Popular Ratification.
Georgia (Continued)....	1861	Convention.	Yes.					
	1865	"	"					
	1868		"					
	1877		"	⅔ of members elected to each house.		Majority vote.	⅔ of members elected to each house and popular vote.	
Florida..............	1839	"	"					
	1865	"	No.					
	1868	"	Yes					
	1885	"	No.	3/5 of members elected to each house.	At regular sessions.	"	"	
Kentucky............	1792	Convention.	No.					
	1799	"	"					
	1850	"	Yes.					
	1891	"	"	3/5 vote of members elected to each house.	Only at regular sessions.	Majority vote.	Majority of legislature and majority of voters.	Majority vote.
Tennessee............	1796	"	No.					
	1834	"	Yes.					
	1870	"	"	Two successive legislatures.	Not more than once in 6 years.	Majority of those voting at election.	Legislature.	
Alabama............	1819	"	No.					
	1865	"	"					
	1867	"	Yes.					
	1875	"	"	3/5 vote of each house.		"	Legislature and popular vote.	
	1901	"						
Mississippi...........	1817	"	No.					
	1832	"	"					
	1868	"	Yes.					
	1890	"	No.	⅔ of each house.		Majority of those voting at election and legislative action.	"	
Louisiana............	1812	"	"					
	1845	"	Yes.					
	1852	"	"					
	1868	"	"					
	1898	"	No.	"		Majority vote.		

STATE CONSTITUTIONS—*Continued*

STATE.	Date.	METHOD OF ADOPTION.		PRESENT METHOD OF AMENDMENT.			PRESENT METHOD OF GENERAL REVISION.	
		Framed by	Popular Ratification.	Proposed by	Limitations.	Popular Ratification.	Convention Called by	Popular. Ratification.
Arkansas	1836	Convention.	No.	Majority elected to each house.	Not more than 3 amdts. at one time.	Majority of those voting at the election.		
	1864	”	Yes.					
	1868	”	”					
	1874	”	”					
Texas	1836	”	”	⅔ of each house.	Only at regular sessions.	Majority vote.		
	1845	”	”					
	1866	”	”					
	1868	”	”					
	1875	”	”					
Oklahoma	1907	”	”	(1) Majority of each house. (2) Popular initiative.		Majority of those voting at election.	Legislature and popular vote.	
Ohio	1802	Convention.	No.	3/5 of members elected to each house.		Majority of votes at the election.	Popular vote once in 20 years ⅔ legislature and popular vote.	
	1851	”	Yes.					
Indiana	1816	”	No.	Two successive legislatures.	Yes.	”		
	1851	”	Yes.					
Illinois	1818	”	No.	⅔ members of each house.	Amdt. to only one article at same session.	”	⅔ legislature and popular vote.	
	1848	”	Yes.					
	1862	”	Rejected.					
	1870	”	Yes.					
Michigan	1835	”	”	(1) ⅔ members of each house. (2) Popular initiative subject to legislative veto.		(1) Majority vote. (2) Not less than ⅓ highest vote at previous election.	Legislative and popular vote. Popular vote once in 16 years.	Majority vote.
	1850	”	”					
	1867	”	Rejected.					
	1873	Commission and legislature.	”					
	1908	Convention.	Yes.					

STATE CONSTITUTIONS—*Continued*

STATE.	Date.	METHOD OF ADOPTION.		PRESENT METHOD OF AMENDMENT.			PRESENT METHOD OF GENERAL REVISION.	
		Framed by	Popular Ratification.	Proposed by	Limitations.	Popular Ratification.	Convention Called by	Popular Ratification.
Wisconsin	1848	Convention.	Yes.	Two successive legislatures.		Majority vote.	Majority legislative and popular vote.	
Minnesota	1857	”	”	Majority of each house.		Majority of those voting at the election.	⅔ legislature and popular vote.	
Iowa	1846	”	”	Two successive legislatures.		Majority vote.	Legislature and popular vote.	
	1857	”	”				Popular vote every 10 years.	
Missouri	1820	”	No.					
	1865	”	Yes.	(1) Majority of members of each house. (2) Popular initiative.		”	Majority of members of legislature and popular vote.	Majority vote.
	1875	”	”					
Kansas	1859	”	”	⅔ of members of each house.	Not more than 3 amdts. at one time.	Majority vote.	⅔ members of legislature and popular vote.	
Nebraska	1867	”	”	⅗ members of each house.		Majority of votes at the election.	⅗ members of legislature and popular vote.	Majority vote.
	1875	”	”					
South Dakota	1889	”	”	Majority of members of each house.		Majority vote.	⅔ members of legislature and popular vote.	
North Dakota	1889	”	”	Two successive legislatures.		”		
Montana	1889	Convention.	Yes.	⅔ members of each house.	Not more than 3 amdts. at a time.	Majority vote.	⅔ members of legislature and popular vote.	Majority vote.
Idaho	1889	”	”	”		”	”	”
Wyoming	1889	”	”	”		”	”	”
Colorado	1876	”	”	”	Amdts. to not more than 6 articles at one time.	”	”	”
Utah	1895	”	”	”		”	”	”

STATE CONSTITUTIONS—*Continued*

STATE.	Date.	METHOD OF ADOPTION.		PRESENT METHOD OF AMENDMENT.			PRESENT METHOD OF GENERAL REVISION.	
		Framed by	Popular Ratification.	Proposed by	Limitations.	Popular Ratification.	Convention Called by	Popular Ratification.
Nevada	1864	Convention.	Yes.	Two successive legislatures.		Majority Vote.	⅔ members of legislature and popular vote.	Majority vote.
California	1849 1879	" "	" "	⅔ members of each house.		"		"
Oregon	1857	"	"	(1) Majority of each house. (2) Popular initiative.		"		
Washington	1889	"	"	⅔ members of each house.		"	"	"

STATE AND TERRITORIAL GOVERNORS

STATE OR TERRITORY.	Governor.	Capital.	Length of Term.	Period of Term.	Salary.
			Years.		
Maine	*Fred. W. Plaisted.*	Augusta.	2	January, 1911–1913	$3,000
New Hampshire	Robert P. Bass.	Concord.	2	January, 1911–1913	3,000
Vermont	John A. Mead.	Montpelier.	2	October, 1910–1912	2,500
Massachusetts	*Eugene N. Foss.*	Boston.	1	January, 1911–1912	8 000
Rhode Island	A. J. Pothier.	Providence.	1	January, 1911–1912	3,000
Connecticut	*S. E. Baldwin.*	Hartford.	2	January, 1911–1913	4,000
New York	*John A. Dix.*	Albany.	2	January, 1911–1913	10,000
New Jersey	*Woodrow Wilson.*	Trenton.	3	January, 1911–1914	10,000
Pennsylvania	J. K. Tener.	Harrisburg.	4	January, 1911–1915	10,000
Delaware	Simeon S. Penneville.	Dover.	4	January, 1909–1913	4,000
Maryland	*Austin L. Crothers.*	Annapolis.	4	January, 1908–1912	4,500
Virginia	*William Hodges Mann.*	Richmond.	4	February, 1910–1914	5,000
West Virginia	Wm. E. Glasscock.	Charleston.	4	March, 1909–1913	5,000
North Carolina	*W. W. Kitchin.*	Raleigh.	4	January, 1909–1913	4,000
South Carolina	*Coleman J. Bleae.*	Columbia.	2	January, 1911–1913	3,000
Georgia	*Hoke Smith.*	Atlanta.	2	July, 1909–1911	5,000
Florida	*Albert W. Gilchrist.*	Tallahassee.	4	January, 1909–1913	5,000

STATE AND TERRITORIAL GOVERNORS—*Continued*

State or Territory.	Governor.	Capital.	Length of Term.	Period of Term.	Salary.
			Years.		
Kentucky	Augustus E. Willson.	Frankfort.	4	December, 1907–1911	$6,500
Tennessee	Ben W. Hooper.	Nashville.	2	January, 1911–1913	7,500
Alabama	*Emmett O'Neal.*	Montgomery.	4	January, 1911–1913	5,000
Mississippi	*Edmund F. Noel.*	Jackson.	4	January, 1908–1912	4,500
Arkansas	*George W. Donaghey.*	Little Rock.	2	January, 1911–1912	4,000
Louisiana	*Jared Y. Sanders.*	Baton Rouge.	4	May, 1908–1912	5,000
Texas	*O. B. Colquitt.*	Austin.	2	January, 1911–1913	4,000
Oklahoma	*Leo Cruce.*	Guthrie. Oklahoma City.	4	January, 1911–1915	4,500
Ohio	*Judson Harmon.*	Columbus.	2	January, 1911–1913	10,000
Indiana	*Thomas R. Marshall.*	Indianapolis.	4	January, 1909–1913	8,000
Illinois	Charles S. Deneen.	Springfield.	4	January, 1909–1913	12,000
Michigan	Chase S. Osborn.	Lansing.	2	January, 1911–1913	5,000
Wisconsin	Francis E. McGovern.	Madison.	2	January, 1911–1913	5,000
Minnesota	A. O. Eberhart.	St. Paul.	2	January, 1911–1913	7,000
Iowa	B. F. Carroll.	Des Moines.	2	January, 1911–1913	5,000
Missouri	Herbert S. Hadley.	Jefferson City.	4	January, 1909–1913	5,000
Kansas	W. R. Stubbs.	Topeka.	2	January, 1911–1913	5,000
Nebraska	C. H. Aldrich.	Lincoln.	2	January, 1911–1913	2,500
South Dakota	R. S. Vesey.	Pierre.	2	January, 1911–1913	3,000
North Dakota	*John Burke.*	Bismarck.	2	January, 1911–1913	3,000
Montana	*Edwin L. Norris.*	Helena.	4	January, 1909–1913	5,000
Idaho	*James H. Hawley.*	Boise.	2	January, 1911–1913	5,000
Wyoming	*Joseph M. Carey.*	Cheyenne.	4	January, 1911–1915	2,500
Colorado	John F. Shafroth.	Denver.	2	January, 1911–1913	5,000
New Mexico Territory	William J. Mills.	Santa Fe.	4	January, 1908–1912	3,000
Arizona	Richard E. Sloan.	Phœnix.	4	February, 1909–1913	3,000
Utah	William Spay.	Salt Lake City.	4	January, 1909–1913	4,000
Nevada	Tasker L. Oddie.	Carson City.	4	January, 1911–1915	4,000
California	H. W. Johnson.	Sacramento.	4	January, 1911–1915	6,000
Oregon	*Oswald West.*	Salem.	4	January, 1911–1915	5,000
Washington	M E. Hay.	Olympia.	4	January, 1909–1913	6,000
Alaska	Walter E. Clark.	Juneau.	4	May, 1909–1913	5,000
Hawaii	Walter F. Frear.	Honolulu.	4	June, 1907–1911	5,000
Porto Rico	George R. Colton.	San Juan.	4	March, 1909–1913	8,000

Roman, Republicans. Italics, Democrats.

STATE JUDICIARY

State.	Highest State Court.					Other Courts.				
	Name of Court.	No. of Judges.	Length of Term.	How Chosen.	Salary.	Name.	No. of Dists.	No. of Judges.	Term.	How Chosen.
			Years.						*Years.*	
Maine	Supreme Court	8	7	Gov. and Council	....	Nisi Prius.	....	......	......	....
						Superior Cts. in 2 counties	....	......	......	....
New Hampshire	" "	5	(*a*)	Gov. and Council	$4,200 4,000	Superior Ct.	....	5	......	....
Vermont	" "	5	2	Legislature	2,500	County Cts.	....	......	......	....
Massachusetts	" "	7	(*b*)	Gov. and Council	....	Superior Ct.	....	25	(*b*)	Gov. and Council
Rhode Island	" "	5	(*c*)	Legislature	....	" "	....	6	(*c*)	Legislature
Connecticut	Ct. of Errors	5	8	Gov. and Legis.	8,000	" "	....	10	8	....
						Cts. of Common Pleas in 5 counties	....	......	......	....
New York	Ct. of Appeals	9	14	Elected	$14,000 13,700	Appl. Div.	4	......	......	....
						Supreme Ct.	9	98	14	Elected
						County Cts.	....	......	......	"
New Jersey	Ct. of Errors and Appeals	9	7	Gov. and Senate	....	Chancellor	....	8	......	Gov. and Senate
						Supreme Ct.	....	9	......	" " "
						Circuit Ct.	....	......	......	" " "
Pennsylvania	Supreme Ct.	7	21	Elected	10,500 10,000	Superior Ct.	....	7	10	Elected
						Court of Common Pleas	....	......	......	....
Delaware	Ct. of Errors and Appeals	6	12	Gov. and Senate	....	Chancellor	....	......	......	Gov. and Senate
						Ct. of Common Pleas	....	......	......	" " "
Maryland	Ct. of Appeals	8	15	Elected by districts		Circuit Cts.	8	......	......	....
					....	Special Cts. in Balt.	....	......	......	....
Virginia	Supreme Ct. of Appeals	8	15	Legislature	$4,700 4,500	Circuit Cts.	29	......	......	....
West Virginia	" " "	4	12	Elected	....	" "	18	......	......	....
North Carolina	Supreme Ct.	5	8	"	3,000	Dist. Cts.	....	......	......	....
South Carolina	" "	4	8	Legislature	3,000	Circuit Cts.	....	......	......	....
Georgia	" "	6	6	Elected	....	Ct. of Appeals	3	......	......	Elected
						Superior Ct.	24	......	......	....
Florida	" "		6	"	....	Circuit Cts.	8	8	......	Gov. and Senate
						County Cts.	....	......	......	....

(*a*) Until 70 years of age. (*b*) During good behavior. (*c*) Until removed by the legislature.

STATE JUDICIARY—*Continued*

STATE.	HIGHEST STATE COURT. Name of Court.	No. of Judges.	Length of Term.	How Chosen.	Salary.	OTHER COURTS. Name.	No. of Dists.	No. of Judges.	Term.	How Chosen.
			Years.						*Years.*	
Kentucky.......	Ct. of Appeals	7	8	Elected by districts	....	Circuit Cts.	33	....	.....	....
Tennessee.......	Supreme Ct.	5	8	Elected	....	Chancery Ct.	....	....	.....	....
Alabama.......	" "	7	6	"	$5,000	Chancery Cts.	5	5	.....	....
						Circuit Cts.	16	16	.....	....
Mississippi......	" "	3	9	Elected by districts		Chancery Cts.	....	....	.....	....
					....	Circuit Cts.	13	....	.....	....
Arkansas........	" "	5	8	Elected	4,000	Circuit Cts.	17	....	.....	....
Louisiana.......	" "	5	....	"	6,000	Circuit Cts. of Appeal	6	....	.....	....
						District Cts.	24	....	.....	....
Texas..........	" "	3	6		....	Ct. of Criminal Appeals	....	3	.....	....
						Cts. of Civil Appeals	5	15	.....	....
						Dist. Cts.	....	....	.....	....
Oklahoma......	" "	5	....	"	....	Crim. Ct. of Appeals	....	....	.....	....
						Dist. Cts.	....	....	.....	....
Ohio..........	Supreme Ct.	6	6	Elected	....	Circuit Cts.	8	24	6	Elected
						Cts. of Common Pleas	....	....	5	"
Indiana.........	" "	5	6	"	$6,000	Appellate Cts.	2	6	.....	....
						Circuit Cts.	62	....	.....	....
						Sup. Cts. in 10 count's	....	....	.....	....
Illinois.........	" "	7	9	"	10,000	Cts. of Appeal	4	....	.....	....
						Circuit Cts.	18	65	6	Elected
						County Cts.	102	102	4	"
Michigan.......	" "	8	8	"	7,000	Circuit Cts.	39	45	6	"
Wisconsin......	" "	7	10	"	6,000	" "	17	....	.....	"
Minnesota......	" "	5	6	"	7,000	Dist. Cts.	19	....	6	"
Iowa..........	" "	6	6	"	6,000	" "	20	53	4	"
Missouri........	" "	7	10	"	4,500	Cts. of Appeal	3	9	12	"
						Circuit Cts.	36	55	6	
Kansas.........	" "	7	6	"	....	Dist. Cts.	37	....	.....	....
Nebraska.......	" "	7	6	"	....	" "	....	....	.....	....
South Dakota...	" "	5	6	"	....	Circuit Cts.	....	....	.....	....
North Dakota...	" "	5	6	"	....	Dist. Cts.	....	....	.....	....
Montana........	Supreme Ct.	3	6	Elected	$6,000	Dist. Cts.	15	....	.....	....
Idaho..........	" "	3	6	"	....	" "	7	....	.....	....
Wyoming.......	" "	3	8	"	....	" "	....	....	.....	....
Colorado........	" "	7	6	"	....		13	....	.....	....
						County Cts.	....	....	.....	....

STATE JUDICIARY—*Continued*

State.	Highest State Court.					Other Courts.				
	Name of Court.	No. of Judges.	Length of Term.	How Chosen.	Salary.	Name.	No. of Dists.	No. of Judges.	Term.	How Chosen.
			Years.						*Years.*	
N. Mexico	Supreme Ct. (territorial)									
Arizona	" " "					Dist. Cts.	....	....	......	....
Utah	Supreme Court.	3	6	Elected.		" "	....	....	......	....
Nevada	" "	3	6	"	6,000					
California	" "	7	12	"	8,000	Cts. of Appeal	3	9	12	Elected
						Superior Cts.	58	98	6	"
Oregon	" "	5	16	Elected by districts		Circuit Cts.	....	....	......	....
Washington	" "	7	6	Elected	5,000	Superior Cts.	7	....	......	....

COUNTY OFFICERS

Name of State.	No. of Counties.	County Bd. No. of Members.	County Judge.	Probate Judge.	Prosecuting Atty.	Sheriff.	Coroner.	Clerk of Court.	Register of Probate.	County Clerk.	Register of Deeds.	County Auditor.	County Assessor.	County Treasurer.	County Surveyor.	Supt. of Schools.	Supt. of Poor.	Health Officer.
Maine	16	3		El.	El.	El.	App.	El.	El.	.....	El.			El.				
New Hampshire	10	3		App.	El.	El.	App.	App.	El.	.....	El.	App.		El.				
Vermont	14	2	El.	dist.	El.	El.		App.		.....		App.		App.			App.	
Massachusetts	14	3		App.	Dist.	El.	.....	El.	El.	.....	El.			El.				
Rhode Island	5	None.				App.		App.										
Connecticut	8	App. 3	s.	dist.	App.	El.	App.	App.				App.		App.				App.
New York	61	Var.	El.	El.	El.	El.	El.	.....		El.	.....	s.		El.		dist.	El.	
New Jersey	21	Var.	El.	El.	El.	El.	El.	.....		El.	s.	App.		App.		App.	s.	
Pennsylvania	67	3		El.	El.	El.	El.	El.	El.	.....	El.	El.	El.	El.	El.	App.	s.	
Delaware	3	7–10		El.		El.	El.	El.	El.	.....	El.			El.		App.		App.
Maryland	24	3–5		El.	El.	El.	App.	El.		.....	.....			El.	El.	App.		App.
Virginia	100	3–8		.....	El.	El.	App.	.....		El.	.....		El.	El.	App.	App.	App.	
	14*a*																	
West Virginia	55	3			El.	El.	App.	El.		El.			El.		El.	El.	App.	App.
North Carolina	98	3–5			Dist.	El.	El.	El.		.....	El.			El.	El.	App.		App.
South Carolina	44	Var.		El.	Dist.	El.	El.	El.		.....	s.	App.		El.		El.		
Georgia	137	.....	s.	El.	Dist.	El.	El.	El.			.....		El.	El.	El.	App.	s.	.....
Florida	46	5	El.	.....	Dist.	El.		El.					El.	El.	El.	El.		App.

a. Cities.

COUNTY OFFICERS—*Continued*

Name of State.	No. of Counties.	County Bd. No. of Members.	County Judge.	Probate Judge.	Prosecuting Atty.	Sheriff.	Coroner.	Clerk of Court.	Register of Probate.	County Clerk.	Register of Deeds.	County Auditor.	County Assessor	County Treasurer.	County Surveyor.	Supt. of Schools.	Supt. of Poor.	Health Officer.
Kentucky	119	8	El.	.....	El.	El.	El.	El.		El.			El.	App.	El.	El.		App.
Tennessee	96	Var.	El.	.....	Dist.	El.	App.	El.		.....	El.	.....	s.	El.	App.	App.	App.	App.
Alabama	67	5	.....	El.	Dist.	El.	El.	El.			.....		El.	El.	App.	El.		App.
Mississippi	76	5		.....	Dist.	El.	El.	El.				El.	El.	El.	El.	El.		App.
Louisiana	59*b*	Var.			El.	El.	El.	.....		El.	.....		El.	App.	El.	App.		App.
Texas	246	4	El.	.....	El.	El.		El.		El.	.....		El.	El.	El.	El.		App.
Oklahoma	26	3		El.	El.	El.	El.			El.	El.		El.	El.	El.	El.	.....	
Arkansas	75	Var.	El.	.....	Dist.	El.	El.	El.		.....	.....		El.	El.	El.	App.		
Missouri	115	3		El.	El.	El.	El.	El.		El.	s.	s.	El.	El.	El.	El.		App
Ohio	88	3		El.	El.	El.	El.	El.			El.	El.	.....	El.	El.	App.	El.	
Indiana	92	3(7)*c*	s.	s.	El.	El.	El.	El.			El.	El.	El.	El.	El.	App.	App.	
Illinois	102	Var.	El.	s.	El.	El.	El.	El.		El.	El.	.....	s.	El.	El.	El.	App.	
Michigan	83	Var.		El.	El.	El.	El.	.....		El.	El.	s.		El.	El.	El.	App.	
Wisconsin	71	Var.	El.	.....	El.	El.	El.	El.		El.	El.	.....	El.	El.	El.	El.		
Minnesota	83	3–5		El.	El.	El.	El.	El.		.....	El.	El.		El.	El.	El.	App.	.....
Iowa	99	3–7			El.	El.	El.	El.		.....	El.	El.		El.	El.	El.	App.	
Kansas	106	3		El.	El.	El.	El.	El.		El.	El.	s.		El.	El.	El.		
Nebraska	91	Var.	El.	.....	El.	El.	El.	El.		El.	s.			El.	El.	El.		
South Dakota	58	3–5	El.	.....	El.	El.	El.	El.		.....	El.	El.	s.	El	El.	El.		App.
North Dakota	45	3–5	El.	El.	El.	El.	El.	El.		.....	El.	El.	s.	El.	El.	El.		App.
Montana	28	3			El.	El.	El.	El.		El.	.....	s.	El.	El.	El.	El.		
Idaho	23	3		El.	El.	El.	El.	El.		.....	.....	.....	El.	El.	El.	El.		
Wyoming	13	3		.....	El.	El.	El.	s.		El.	.....		El.	El.	El.	El.		.....
Colorado	59	3–5	El.	.....	Dist.	El.	El.	.....		El.	.....		El.	El.	El.	El.	.....	.....
New Mexico	26	3		El.	Dist.	El.	.....	El.	El.		.....		El.	El.	El.	El.		.....
Arizona	13	3		El.	El.	El.	El.	El.		s.	El.		s.	El.	El.	s		App.
Utah	27	3			El.	El.		.....		El.	El.	s.	El.	El.	El.	El.		
Nevada	14	3		.....	El.	El.	.....	.....		El.	El.	El.	El.	El.	El.	El.		
California	58	3–7	El.	.....	El.	El.	El.	.....		El.	s.	El.	El.	El.	El.	El.		App.
Oregon	33	2		.....	Dist.	El.	El.	.....		El.	s.	El.	El.	El.	El.	El.		
Washington	38	3		.....	El.	El.	El.	.....		El.	.....	El.	El.	El.	El.	El.		App.

a. Cities. *b.* Parishes. *c.* 3 County Commissioners; 7 members in the County Councils.

El. equals an Elective County Office.
App. equals an Appointive County Office.
dist. equals Elected or Appointed for District smaller than a County.
Dist. equals Elected or Appointed for District larger than a County.
s. equals a county office in some counties.
..... equals duties performed by some other officer.
Var. equals number varies in different counties.

STATE AND TERRITORIAL LEGISLATURES

STATE OR TERRITORY.	NUMBER OF MEMBERS.		LENGTH OF TERM.		Regular Sessions.	Session Begins.	Limit of Session.	Salary.
	Senate.	House.	Senate.	House.				
			Years.	*Years.*			*Days.*	
Maine	31	151	2	2	Biennial.	January 4, 1911	None.	$300 per year.
New Hampshire	24	390	2	2	"	January 4, 1911	"	200 per term.
Vermont	30	246	2	2	"	October 5, 1910	"	4 per day.
Massachusetts	40	240	1	1	Annual.	January 4, 1911	"	750 per year.
Rhode Island	38	72	1	1	"	January 3, 1911	"	5 per day, not over 60 days.
Connecticut	35	255	2	2	Biennial.	January 4, 1911	"	300 per year.
New York	51	150	2	1	Annual.	January 4, 1911	None.	1,500 per year.
New Jersey	21	60	3	1	"	January 11, 1911	"	500 per year.
Pennsylvania	50	207	4	2	Biennial.	January 3, 1911	"	1,500 per session.
Delaware	17	35	4	2	"	January 3, 1911	60	5 per day.
Maryland	27	101	4	2	Biennial.	January 3, 1912	90	5 per day.
Virginia	40	100	4	2	"	January 10, 1912	60	500 for regular session. 250 for extra session.
West Virginia	30	87	4	2	"	January 11, 1911	45	5 per day.
North Carolina	50	120	2	2	"	January 4, 1911	60	4 per day.
South Carolina	42	124	4	2	Annual.	January 10, 1911	None.	200 per session.
Georgia	44	175	2	2	"	October 26, 1910	50	4 per day.
Florida	32	68	4	2	Biennial.	April 4, 1911	60	6 per day.
Kentucky	38	100	4	2	Biennial.	January 2, 1912	60	5 per day.
Tennessee	33	99	2	2	"	January 2, 1911	75	4 per day.
Alabama	35	106	4	4	Quadrennial	January 10, 1911	50	4 per day.
Mississippi	45	136	4	4	Biennial.	January 2, 1912	45	400 regular, $5 per day, special session.
Arkansas	35	100	4	2	"	January 9, 1911	90	5 per day.
Louisiana	42	115	4	4	"	May 6, 1912	60	5 per day.
Texas	31	133	4	2	"	January 10, 1911	..	5 per day, for 60 days, $2 per day thereafter.
Oklahoma	44	109	4	2	"	January 3, 1911	..	6 per day, for 60 days, $2 per day thereafter.

STATE AND TERRITORIAL LEGISLATURES—*Continued*

State or Territory.	Number of Members.		Length of Term.		Regular Sessions.	Session Begins.	Limit of Session.	Salary.
	Senate.	House.	Senate.	House.				
			Years.	*Years.*				
Ohio	34	117	2	2	Biennial.	January 1, 1912	None.	$1,000 per year.
Indiana	50	100	4	2	"	January 5, 1911	60	6 per day.
Illinois	51	153	4	2	"	January 4, 1911	None.	1,000 per year.
Michigan	32	100	2	2	"	January 4, 1911	"	800 regular session. 5 per day, extra session.
Wisconsin	33	100	4	2	"	January 11, 1911	"	500 per year.
Minnesota	63	119	4	2	"	January 3, 1911	90	500 per year.
Iowa	50	108	4	2	"	January 9, 1911	None.	550 regular session.
Missouri	34	142	4	2	"	January 4, 1911	..	5 per day, for 70 days. 1 per day thereafter.
Kansas	40	125	4	2	"	January 10, 1911	50	3 per day.
Nebraska	33	100	2	2	"	January 3, 1911	60	5 per day.
South Dakota	45	104	2	2	"	January 3, 1911	60	5 per day.
North Dakota	47	99	4	2	"	January 3, 1911	60	5 per day.
Montana	27	73	4	2	Biennial.	January 2, 1911	60	12 per day.
Idaho	23	51	2	2	"	January 2, 1911	60	5 per day.
Wyoming	27	56	4	2	"	January 10, 1911	40	8 per day.
Colorado	35	65	4	2	"	January 4, 1911	90	7 per day.
New Mexico Ter.	12	24	2	2	"	January 16, 1911	60	4 per day.
Arizona Ter.	12	24	2	2	"	January 16, 1911	60	4 per day.
Utah	18	45	4	2	"	January 9, 1911	60	4 per day.
Nevada	19	48	4	2	"	January 16, 1911	60	10 per day, not to exceed $600.
California	40	80	4	2	"	January 2, 1911	None.	1,000 annually.
Oregon	30	60	4	2	"	January 9, 1911	40	3 per day.
Washington	42	95	4	2	"	January 10, 1911	60	5 per day.
Hawaii	..	...	4	2	Biennial.	February 15, 1911	90	400 per year.
Porto Rico	..	...	4	2	Annual.	January 9, 1911	60	5 per day.

ELECTION OR APPOINTMENT OF STATE OFFICERS

Executive officers of the several states are elected by the people, or are appointed to office, as indicated below. It will be seen that the widest difference exists, as between the several states, in the number and character of the executive officers who are elected and those who are appointed.

In this presentation, the author has grouped the states by the divisions established by the United States Census office, and now commonly accepted, viz., New England states, middle Atlantic states, north central states, south Atlantic states, south central states, and western states.

NEW ENGLAND STATES

Maine.—The members of the council, the secretary of state, treasurer, and attorney general are elected by joint ballot of the Senators and representatives in convention.

Appointive officers include the superintendent of schools, insurance commissioner, bank examiner, land agent, commissioner of labor, commissioner of agriculture, railroad commissioners, state assessors, board of health, and fish and game commissioners.

New Hampshire.—The secretary, treasurer, and commissary general are chosen by joint ballot of the Senators and representatives, and the attorney general is appointed by the governor and council.

Vermont.—Elective state officers include the governor, lieutenant governor, treasurer, secretary of state, and auditor of accounts.

Massachusetts.—Elective state officers, in addition to the governor and lieutenant governor, are: secretary of the commonwealth, treasurer, attorney general, auditor, and executive council.

Appointive officials, boards, and commissions include: the board of education, board of charity, board of insanity, board of health, railroad commission, bank commissioner, gas and electric light commission, harbor and land commission, highway commission, insurance commission, prison commission, tax commissioner, and civil service commission.

Rhode Island.—Elective state officers include the governor, lieutenant governor, secretary of state, attorney-general, and general treasurer. The state board of education is chosen by the general assembly.

Appointive boards include: the state board of charities and corrections, state board of health, state board of public roads, commissioners of fisheries, state auditor and insurance commissioner, and railroad commissioner.

Connecticut.—Elective state officers include: the governor, lieutenant governor, secretary, treasurer, comptroller, and attorney general. The commissioner of the school fund and state board of education are chosen by the general assembly.

Among the appointive officials are: the insurance commissioner, railroad commissioner, highway commissioner, bank commissioner, tax commissioner, commissioners of fisheries and game, dairy commissioner, commissioner of labor statistics, commissioners of state police, state board of health, and state board of charities.

MIDDLE ATLANTIC STATES

New York.—Elective state officers include, in addition to the governor and lieutenant governor, the secretary of state, comptroller, treasurer, attorney general, and state engineer and surveyor.

The most important appointive officials, boards, and commissioners are: insurance superintendent, banking superintendent, public service commissions, superintendent of public works, tax commissioner, excise commissioner, commissioner of education, forest, fish, and game commissioner, superintendent of prisons, commissioner of labor, commission on lunacy, state board of charities, state board of health, and civil service commission.

New Jersey.—The state treasurer and comptroller are chosen by the Senate and general assembly in joint meeting; the attorney general and secretary of state are appointed by the governor with the advice and consent of the Senate.

Pennsylvania.—The only elective state officers, in addition to the governor and lieutenant governor, are: the auditor general, the treasurer, and the secretary of internal affairs.

Appointive state officials and commissions include the secretary of the commonwealth, attorney general, superintendent of public instruction, insurance commissioner, commissioner of banking, secretary of agriculture, state highway commissioner, chief of the department of mines, factory inspector, commissioner of health, railroad commission, superintendent of state police, and board of public charities.

Since its organization in 1905 the state constabulary of Pennsylvania has proved an effective means for maintaining order and enforcing law in disturbed districts. It consists of about 225 members, originally established to replace the coal and iron police maintained by mining corporations, and was expected to be used mainly in the mining regions. In fact, their services have been utilized in many different ways in every part of the State. They have acted as forest, fish, and game wardens, have suppressed disorderly resorts and gambling houses, and furnished a long-needed aid to county officials in maintaining law and order outside of the cities.

NORTH CENTRAL STATES

Ohio.—Elective state officers, in addition to the governor and lieutenant governor, are: secretary of state, treasurer, auditor, commissioner of education, and attorney general.

Appointive officials and boards include: the board of health, board of public works, dairy and food commissioner, railroad commissioner and food commissioner, railroad commission, and tax commission.

Indiana.—Elective state officers, in addition to the governor and lieutenant governor, are: secretary of state, auditor of state, treasurer, attorney general, and superintendent of public instruction.

Appointive officials and boards include: the railroad commission, tax commission, state examiner, the state board of education, board of state charities, state board of health, and fish and game commissioner.

Illinois.—Elective state officers include, in addition to the governor and lieutenant governor: the secretary of state, auditor of public accounts, treasurer, superintendent of public instruction, attorney general, trustees of the state university, and the state board of equalization.

The principal appointive officials, boards, and commissions are: insurance superintendent, railroad and warehouse commission, bureau of labor, state mining board, state board of health, state board of education, board of administration, state food commissioner, state game commissioner, and state civil service commission.

The new board of administration, established in 1909, to control the various state charitable institutions, has taken over the management of these institutions during the past year.

Michigan.—Elective state officers, in addition to the governor and lieutenant governor, are: secretary of state, state treasurer, auditor general, state land commissioner, attorney general, superintendent of public instruction, regents of the university, the state board of agriculture, and board of education.

The principal appointive officials, boards, and commissions are: insurance commissioner, commissioner of banking, railroad commission, commissioner of labor, dairy and food commissioner, state board of health, state board of corrections and charities, board of state tax commissioners, and the boards for the control and management of the charitable and correctional institutions.

Wisconsin.—Elective state officers, in addition to governor and lieutenant governor, are: secretary of state, treasurer, attorney general, and superintendent of public instruction.

Appointive officials, boards, and commissions include: insurance commissioner, commissioner of labor and industrial statistics, railroad commission, banking commissioner, dairy and food commissioner, state board of health, and civil service commission.

Minnesota.—Elective state officers consist of the governor, lieutenant governor, secretary of state, auditor, treasurer, attorney general, and the railroad and warehouse commissioners.

Appointive officials, boards, and commissions include: the public examiner, commissioner of insurance, superintendent of public instruction, dairy and food commissioners, commissioner of labor, state board of control (for the management of charitable and correctional institutions), and the tax commissioner.

Iowa.—Elective state officers include, in addition to the governor and lieutenant governor, the secretary of state, auditor of state, treasurer of state, attorney general, who, together, form an executive council.

Other officials, boards, and commissions appointed by the governor are: superintendent of public instruction, railroad commission, commissioner of labor statistics, food and dairy commissioner, board of health, board of control of state institutions, and the state board of education. The board of control manages all the state charitable and correctional institutions; and the state board of education has the management of the several state educational institutions.

Missouri.—Elective state officers, in addition to the governor and lieutenant governor, are: secretary of state, state auditor, state treasurer, attorney general, superintendent of public schools, and railroad and warehouse commissions.

Appointive officials, boards, and commissions include: the board of agriculture, state board of charities and corrections, board of equalization, state food and dairy commissioner, state board of health, insurance superintendent, commissioner of labor statistics.

North Dakota.—Elective state officers include: the governor, lieutenant governor, secretary of state, auditor, treasurer, superintendent of public instruction, commissioners of insurance, three commissioners of railroads, attorney general, and commissioners of agriculture and labor.

South Dakota.—Elective state officers include: the governor, lieutenant governor, secretary of state, auditor, treasurer, superintendent of public instruction, commissioner of school and public lands, and attorney general.

Nebraska.—Elective state officers include: the governor, lieutenant governor, secretary of state, auditor of public accounts, treasurer, superintendent of public instruction, attorney general, and commissioner of public lands and buildings.

Kansas.—Elective state officers include: the governor, lieutenant governor, secretary of state, auditor, treasurer, attorney general, and superintendent of public instruction.

Appointive officials include: the state board of charities, state board of public works, and state board of education.

SOUTH ATLANTIC STATES

Maryland.—The attorney general and comptroller are elective officers; the treasurer is chosen by the two houses of the legislature on joint ballot; the secretary of state and commissioner of the land office are appointed by the governor by and with the advice and consent of the Senate.

Other appointive officers include: the commissioner of the land office, tobacco inspector, insurance commissioner, commissioners of fisheries, commissioner of immigration, and state board of health.

Delaware.—Elective state officers are: the governor, lieutenant governor, attorney general, insurance commissioner, state treasurer, and auditor of accounts; the secretary of state is appointed by the governor with the consent of the Senate.

Virginia.—Elective state officers include: the governor, lieutenant governor, secretary of the commonwealth, state treasurer, and attorney general. The auditor of public accounts is chosen by joint vote of the two houses of the general assembly.

West Virginia.—Elective state officers include: the governor, secretary of state, state superintendent of free schools, auditor, treasurer, and attorney general.

North Carolina.—Elective state officers include: the governor, lieutenant governor, secretary of state, auditor, treasurer, superintendent of public instruction, and an attorney general.

South Carolina.—Elective state officers include: the governor, lieutenant governor, secretary of state, comptroller general, attorney general, treasurer, adjutant and inspector general, and superintendent of education.

Georgia.—Elective state officers include: the governor, secretary of state, comptroller general, treasurer, attorney general, state school commissioner, commissioner of agriculture, railroad commissioners, and prison commissioners.

Florida.—Elective state officers include: the governor, secretary of state, attorney general, comptroller, treasurer, superintendent of public schools, and commissioner of agriculture.

SOUTH CENTRAL STATES

Kentucky.—Elective state officers include: the governor, lieutenant governor, treasurer, auditor of public accounts, registrar of the land office, commissioners of agriculture, labor, and statistics, secretary of state, attorney general, and superintendent of public instruction.

Oklahoma. — Elective officers include: the governor, lieutenant governor, secretary of state, state auditor, attorney general, state treasurer, superintendent of public instruction, state examiner and inspector, chief mine inspector, commissioner of labor, commissioner of charities and corrections, and commissioner of insurance.

Tennessee.—The secretary of state, treasurer, and comptroller are chosen by joint vote of both houses of the general assembly. Appointive officers include: the commissioner of agriculture, commissioners of labor, statistics, and mines, state board of health, and board of state charities.

Alabama. — Elective state officers include: the governor, lieutenant governor, attorney general, state auditor, secretary of state, state treasurer, superintendent of education, and commissioner of agriculture and industries. Appointive officials include: the railroad commissioners and trustees of the various state institutions.

Mississippi.—Elective state officers include: the governor, lieutenant governor, secretary of state, state treasurer, auditor of public accounts, and attorney general.

Louisiana.—Elective state officers include: the governor, lieutenant governor, auditor, treasurer, attorney general, secretary of state, and superintendent of public education.

Arkansas.—Elective state officers include: the governor, secretary of state, treasurer of state, auditor of state, and attorney general.

Texas.—The executive department consists of the governor, lieutenant governor, secretary of state, comptroller of public accounts, treasurer, commissioner of the general land office, and attorney general. All of these are elective officers, except the secretary of state, who is appointed by the governor and Senate. Other appointive officials include: the commissioners of agriculture, insurance, statistics, and history, and various boards. The railroad commissioners are elective.

WESTERN STATES

Montana.—Elective state officers include: the governor, lieutenant governor, secretary of state, attorney general, state treasurer, state auditor, and superintendent of public instruction.

Idaho.—Elective state officers include: the governor, lieutenant governor, secretary of state, state auditor, state treasurer, attorney general, and superintendent of public instruction.

Wyoming.—Elective state officers include: the governor, secretary of state, auditor, treasurer, and superintendent of public instruction.

Colorado. — Elective state officers include: the governor, lieutenant governor, secretary of state, auditor of state, state treasurer, attorney general, and superintendent of public instruction.

Utah.—Elective state officers include: the governor, secretary of state, auditor, state treasurer, attorney general, and superintendent of public instruction.

Nevada.—Elective state officers include: the governor, lieutenant governor, secretary of state, treasurer, comptroller, surveyor general, and attorney general.

Washington.—Elective state officers include: the governor, lieutenant governor, secretary of state, treasurer, auditor, attorney general, superintendent of public instruction, and commissioner of public lands.

Oregon.—Elective state officers include: the governor, secretary of state, treasurer of state, and state printer.

California. — Elective officers are: the governor, lieutenant governor, secretary of state, comptroller, treasurer, attorney general, surveyor, general superintendent of public instruction, state board of equalization, and the railroad commission. Other officers, boards, and commissions include: the board of education, the board of regents of the University, the state board of prison directors, the state board of charities and corrections, the commission in lunacy, the bank commissioner, insurance commissioner, commissioner of labor statistics, the state board of health, the board of agriculture, the commission on horticulture, the state board of forestry, the state mining bureau, the state dairy bureau, and the board of state harbor commissioners.

COUNTY ADMINISTRATION IN THE UNITED STATES

Local administration in the United States is determined by each of the forty-six states acting independently. Under these conditions there are inevitably countless variations in the organization and powers of the local authorities in the different states; and an account of the system of local administration requires an elaborate study of the constitutions and laws of all the states. At the same time such an examination discloses certain important institutions resembling each other throughout the Union; and other features which are similar in closely related groups of states. These conditions are due to the influence of the historical origin of American institutions in those of England, to the constant intercourse between the various states, and to the conscious and unconscious imitation and adaptation by each state of the institutions and practices of other states.

The County.—Among the districts of local administration in the United States the most common is the county. Every state is divided into districts called counties, except in the State of Louisiana, where the corresponding district is known as the parish; and with a great deal of variation in the powers and organization of the county authorities, there are yet important features in common which mark county administration as fundamentally similar throughout the United States.

The American county occupies a distinctly different position in the general plan of public administration from that of the local districts in European countries. The name county indicates its historical connection with the county in England from which the American county has developed. But in its functions and general importance the American county now differs widely from the English county; while it is even less like the provinces, departments, or other local districts in the countries of continental Europe.

To understand the development of the county in the United States it is necessary to recall the system of county administration in England in the seventeenth century, when the English colonies in America were established. At that time the important county officials in England were the lord lieutenant, the sheriff, the coroner, and justices of the peace. All but the coroner were appointed by the crown; but after the decline of the active control by the Privy Council, local administration in practice was highly decentralized. The lord lieutenant was head of the militia system. The sheriff was the chief conservator of the peace and executive agent of the judicial courts. But local administration was mainly looked after by the justices of the peace, the justices in each county forming collectively a quarterly court of criminal jurisdiction, which also acted as the fiscal and administrative authority for county affairs.

In the American colonies counties were organized with similar officials, appointed by the colonial governors. But during the colonial period, and especially about the end of the seventeenth century, important changes were made in some of the colonies. In New York and Pennsylvania locally elected county boards were established which gradually acquired the fiscal and administrative powers of the justices of the peace. In Pennsylvania the sheriffs were made locally elective in 1705. Some new county officers and additional county functions also developed—the county treasurer appearing first in Massachusetts, local prosecuting attorneys in Connecticut, and in most of the counties county recorders to keep public records of deeds and other documents affecting titles to land.

At the same time the importance of the county was affected by the development of town government in New England, and to some extent in the middle colonies from New York to Pennsylvania. But in the southern colonies the county was the main unit of local administration.

From the Declaration of Independence in 1776 until the middle of the nineteenth century important changes in county administration, as well as in other features of state and local administration, were gradually introduced both in the seaboard states and the new states organized in the interior. The main results of these changes were to establish a radically democratic and decentralized system. The electoral franchise was extended to include all male citizens. The county officials were made locally elective; and the number of such officials was largely increased. In most of the states an elective county board took over the administrative functions of the justices of the peace; while the sheriffs, prosecuting attorneys, county treasurers, county clerks, county recorders, and the justices of the peace all became elective officials.

Since the Civil War there have been few general and permanent changes in the legal principles of county administration. But with the growth of the United States there have been important developments in the functions of the county and in the methods of administration. The county system has been extended throughout the country, and the increase of population and the general tendency toward the expansion of public activities have added much to the scope of county administration.

There are about 3,000 counties in the United States. Most of the larger states have from sixty to 100 counties each. At one extreme Texas has 243 counties; at the other Rhode Island has five and Delaware three.

In area and population the counties show great differences; but for the most part American counties are much smaller both in area and population than counties in England, departments in France, and provinces in Prussia, Belgium, Italy, or Spain. Nearly two thirds of the counties contain from 300 to 900 square miles; and the most usual areas are from 400 to 650 square miles. More than half the counties have a population of 10,000 to 30,000; but in the north Atlantic states more than half the counties have over 50,000 population, while in the southern states, and still more in the states west of the arid plains, many counties have less than 10,000 population.

Nine tenths of the counties are distinctively rural in character, but a considerable number of counties contain important cities, and the most important counties are those where the largest cities are located—as New York City (which includes four counties), Chicago, Philadelphia, St. Louis, Boston, Baltimore, San Francisco, and Denver. In some of these cases the county administration is partly absorbed in that of the city.

The comparatively small area and population of most counties in the United States necessarily makes them less important for some branches of public administration than the counties, departments, and provinces in European countries. On the other hand, the highly decentralized methods of administration followed in the states of the American Union add much to the number of officials locally elected by counties. Not only local county authorities, but even the principal agents of the state government are elected within each county, and are subject to little or no effective supervision by the central government of the states. The National Government has no supervision or control whatever over county or other locally elected officials.

County Officials.—The powers and public functions of counties and county officials are far from uniform in all the states; and there are wide variations between the states in the relative importance of the county as an administrative district. But it is possible to note certain common factors, and to call attention to some of the most important differences.

Very little in the way of legislative power, even in local matters, has been conferred on counties in the United States. They are considered in law as primarily agents and instrumentalities of the state to carry out its governmental functions. The county officials thus act almost entirely under the provisions of statutes passed by the state legislatures, which define their duties and enumerate their powers in minute detail. In some cases, however, important questions are submitted to a popular referendum of the whole body of electors in the county—such as loans for public buildings or public works, and the prohibition or licensing of places for the sale of intoxicating liquors, under "local option" laws. In 1909 a more general grant of local legislative power was made to the county authorities by the legislature of the State of Michigan.

But if the legislative power of the counties is small, its administrative functions are extensive; and locally elected county officials are intrusted with the execution of the most important state laws.

In all the states the county is primarily a district for the administration of justice. Courts of general criminal and civil jurisdiction are held at frequent intervals in every county. The judges of these courts are usually elected (or in some states appointed) for a larger district than a single county; but a number of the more populous counties form each a judicial district for such courts; while more frequently one or more county judges, with a limited jurisdiction, are locally elected. Even for the courts of general jurisdiction, the administrative officers (clerks, sheriffs, and prosecuting attorneys) are, as a general rule, elected within each county. In connection with the administration of justice, court houses and jails are maintained in each county. The county is also to a slight extent a police district, the sheriff acting as conservator of the peace; but no system of organized and disciplined county police has been developed in any of the states. In nearly every state the county is the district for the public record of land documents, and for the probate of wills, the administration of estates, and supervision of orphans.

Except in the New England states, counties have important functions in the construction and maintenance of roads and bridges, and sometimes of other local public works. But even the construction of main highways is for the most part done in a primitive way, and, in the few states where good roads have been built, the work has been done by the state.

In nearly all the states the county is a district for the administration of poor relief. Public almshouses or poorhouses are maintained, and in the more populous counties there are other charitable institutions. But such specialized institutions as hospitals for the insane, and schools for the deaf and dumb, are for the most part maintained directly by the state governments.

Outside of New England the county is a district for school purposes. In the most important group of states, covering the central region from New York and New Jersey west to Kansas and Nebraska, county-school officers supervise the local school officials in the rural districts. In many of the southern and western states the county is the main unit for local school administration.

In many states the county is also a district for the administration of health and sanitation laws.

Taxes and Assessments.—In connection with these functions, and also as agents for both the state and smaller districts, the county in all but two or three New England states

COUNTY RECEIPTS AND PAYMENTS—1902

(U. S. Census Report on Wealth, Debt, and Taxation)

RECEIPTS.	New England States.	Middle Atlantic States.	North Central States.	South Atlantic States.	South Central States.	Western States.	Total.
Property and business taxes	$3,299,857	$19,869,769	$55,571,130	$14,520,568	$20,755,807	$29,445,498	$143,472,629
Poll taxes	....	188	1,133,084	2,163,908	3,561,048	525,753	7,383,981
Liquor Licenses	49,240	374,624	3,869,821	254,397	1,123,726	1,244,120	6,915,928
Other licenses	187,796	195,908	634,891	121,996	513,378	417,889	2,071,758
Fines and forfeits	274,551	208,388	493,753	401,959	940,788	158,691	2,478,300
Subventions	9,713	1,824,392	171,318	2,961,661	7,856,074	3,074,482	15,897,690
All other general revenue	18,459	71,678	453,612	210,980	110,890	198,441	1,064,060
Total general revenue	3,839,616	22,544,997	62,327,600	20,635,469	34,861,781	35,074,874	179,284,346
Commercial revenue	547,028	2,125,882	10,971,546	532,927	3,631,553	2,026,186	19,835,122
Loans	1,683,186	8,622,075	11,593,809	3,186,407	4,694,542	4,767,066	34,547,067
Temporary receipts	806,030	19,516,338	187,129,100	8,894,348	21,950,366	26,034,719	264,331,701
Grand total receipts	$6,876,642	$52,809,292	$272,022,064	$33,249,151	$65,138,242	$67,902,845	$497,998,236

PAYMENTS.	New England States.	Middle Atlantic States.	North Central States.	South Atlantic States.	South Central States.	Western States.	Total.
General	$792,876	$7,173,268	$24,065,281	$3,304,773	$6,670,347	$8,256,613	$50,263,158
Courts	1,113,055	4,130,166	8,025,887	1,868,447	3,216,822	2,824,019	21,178,396
Jails	767,880	1,690,226	2,215,959	659,905	1,178,005	785,762	7,297,737
Boards of Health	1,806	46,146	955,065	177,341	380,480	337,921	1,898,759
Charities	517,941	4,471,204	10,477,779	1,256,968	1,348,861	2,331,294	20,404,047
Roads and bridges	169,428	2,236,337	9,379,534	4,848,825	6,475,235	5,712,186	28,321,545
Schools	149,879	77,888	3,053,551	6,948,504	12,467,272	11,399,094	34,096,188
Interest	255,519	1,698,888	3,773,177	664,448	1,365,974	1,855,094	9,613,100
All other	48,889	425,639	957,338	113,401	341,818	366,517	2,253,602
Total for expenses	3,817,273	21,949,762	62,903,571	19,542,612	33,444,814	33,868,500	175,526,532
Outlays	581,865	4,318,629	9,298,574	1,527,674	1,790,324	2,243,168	21,839,295
Temporary	833,033	19,323,985	186,712,164	8,428,440	21,583,644	25,572,928	262,454,394
Principal of debt	1,459,680	6,811,375	10,537,536	3,038,060	4,453,787	4,329,895	30,720,333
Grand total payments	$6,691,851	$52,403,751	$269,451,845	$32,536,786	$63,441,813	$66,014,509	$490,540,555

is a district of considerable importance in finance administration. It levies taxes and expends the proceeds for the different purposes noted above. In most states county officials act also as agents for the collection of state revenues, and frequently also for the collection of revenues of smaller local districts. In the states of the South and the West property is assessed for taxation by county officers, and in many other states county officers have some supervision over local assessments.

The numerous list of officials elected in each county makes the county an important election district, and it is also always a unit for the canvass of votes for officials elected in larger districts, such as members of Congress and state officers. The position of the county as an election district is indicated by the importance of the county committee in the political party organizations in many of the states.

Relative Geographical Importance.—Measured by the number of functions and by the relative importance of the county in comparison with smaller local districts, the county is of most importance in the southern states and the mountain and Pacific coast states of the West. By these tests the county is relatively of least importance in the New England states, where on one hand the judicial administration is more highly centralized, while on the other hand the towns are local districts of importance.

But if a quantitative standard of the intensity of county administration is applied, the results are somewhat different. Judged by the per capita rate of expenditure the county is of much the greatest importance in the states from the Rocky Mountains westward. Second rank is taken by the populous middle Atlantic and north central states, where indeed the largest aggregate county expenditures are made. By this standard of per capita expenditure the southern states fall in the same group with three of the New England states — Massachusetts, New Hampshire, and Maine. In the three remaining New England states county finances are practically negligible.

County Statistics.—Appended hereto are summary tables of county receipts and payments by groups of states for the year 1902. These tables illustrate the importance of county finances in the different groups, and the relative importance of the principal objects of expenditure. The largest specific item is for schools, but this is made up mainly by the southern and western states. Next in importance are expenditures for roads and bridges; third, are the expenditures for courts, which are the largest specific item in the New England group; and fourth, are the expenditures for charities, which form the largest specific item in the middle Atlantic and north central groups.

Of the grand total of county receipts and payments ($497,998,236), more than half are temporary funds, mostly revenues collected for the state governments and for other local authorities. The total revenue and payments for expenditures made directly by the county authorities ($197,000,000) is somewhat larger than the total revenues and payments of the central state governments. But both state and county finances in the United States are but a fraction of the financial transactions of the National Government or those of the cities.

County Boards.—No well-defined or systematic principle seems to have been followed in the organization of county administration except that popular election has been extended to all classes of county officials indiscriminately. There is no authority with important powers of local legislation corresponding to the councils general of France, the county councils of England, or the provincial diets in Prussia. There is in all but two states a county board, which usually levies local taxes and has general supervision over the local administration, though by no means an effective control over the elective officials. In most of the states these county boards are composed of three to five members, usually called commissioners. (See table preceding.) In a number of states, however, the county boards are larger, and are composed of from fifteen to fifty members, elected by the townships and cities or other local districts. Such boards of supervisors are found in New York, Michigan, Wisconsin, and Illinois; and there are somewhat similar bodies in Louisiana under the title of police juries. In two of the southern states (Kentucky and Tennessee) the fiscal and administrative business of the county is still performed by the local justices of the peace, sitting as a county court—these justices being also elected in subdivisions of the county. But these larger bodies have, as a rule, but little more legislative power than the small boards of commissioners, and their size makes them rather unwieldy for administrative business. An important exception is found in the very recent legislation of Michigan, where the boards of supervisors have been given a broad and general grant of local legislative powers.

In a few states the powers of taxation and appropriations are placed in a body distinct from the county board, as in Indiana, where there was established (in 1899) in each county a small county council in addition to the board of county commissioners, while somewhat similar results have been secured in other ways in some of the smaller New England states. But this separation of powers is as yet exceptional, and at present does not seem likely to become a general system.

County Officials.—Besides the county board there are a considerable number of other county officials, most of them chosen by popular election. These elective officers are largely independent within their own sphere, and there is no effective supervision either by the county board or by any one of the officials being clearly recognized as the chief executive officer of the county.

The sheriff is the oldest of the county officers, but he has lost very much of the power and dignity of the English sheriff. He still retains some relics of former authority as chief conservator of the peace, but for the most part is now a mere ministerial officer of the judicial courts, to execute their warrants and decrees. The public prosecutor has now become one of the principal county officials in some of the states; and in counties containing large cities, such as New York, Chicago, Philadelphia, and St. Louis, the importance of this office is coming to be more fully realized. In several cases it has been a stepping stone to the governorship of a state. The office of county treasurer is usually one of the most lucrative; and is important as the financial agent not only of county funds, but also as the collector of state revenues and sometimes also the revenues of local districts within the county.

Other elective county officials of less importance are the county clerks, recorders of deeds, auditors, assessors, school commissioners, surveyors, and coroners. The precise titles of some of these officials vary in the different states. In the New England states there are comparatively few county officers, and in Rhode Island there are only two—the sheriff and clerk of court, both of whom are chosen by the general assembly of the state. On the other hand, there are in some states additional elective officials besides those named above; and in most of the states there are also a number of appointed officials, such as poor commissioners and health officers.

County officers in the United States are usually elected for terms varying from two to six years. In the older states east of the Mississippi River, the terms of different officers often vary. West of the Mississippi most of the states have a uniform term of two years for county officers, and all terms expire at the same time.

There can be no doubt that county administration in the United States lacks systematic organization, and that there are too many elective offices. The numerous list of positions and the slight importance of many of them makes impossible any real knowledge or discussion on the part of the voters of the merits and demerits of candidates. Elections, especially in the more populous counties, are usually determined by the success of one party ticket, and the effective choice is thus made in selecting the party candidates. This has tended to strengthen the influence of party bosses; and in many cases county offices have been filled by politicians of the lower types. In rural counties a popular candidate may more often secure his election on personal grounds; and there have been some important cases of successful independent candidates in populous counties. But, as a rule, comparatively little public attention is paid to the election of county officials. The short terms promote frequent changes in the offices, many of which are purely administrative and with no political functions. At the same time the duties of the county officials are of no little importance; and as their importance is steadily increasing there is a serious need for decided changes in the organization of the county administration.

Summary. — To summarize: The county in the United States has developed from the English county, but the organization of the county administration has been thoroughly decentralized, and in fact disorganized by the radical extension of popular elections for all classes of officials. Most of the 3,000 counties are smaller in size and social importance than the principal districts of local administration in European countries; and the field for administrative action is necessarily smaller in some respects. But the decentralized system of state administration adds in other directions to the work done by locally elected and appointed officials in the counties. The administration of justice, roads and bridges, and poor relief are the principal branches of county administration; while there is some county supervision of public instruction in most states, and the county is the main local unit for school purposes in some of the southern and far western states.

The principal county authority is the locally elected county board, organized in various ways, with administrative and taxing powers, but with little local legislative authority. Among the numerous other elective officials are the sheriff, prosecuting attorney, and treasurer; but there is no clearly defined chief executive, and the county administration should be more systematically organized to meet the increasing importance of the functions exercised. (A complete biliography will be found at the end of the department.)

TERRITORIES AND DEPENDENCIES

Frank McIntyre

New Mexico and Arizona. — The President in his first annual message urged legislation providing for the admission of New Mexico and Arizona as separate states, and outlined his views as to what this legislation should provide. Pursuant to this recommendation there was passed, and on June 20, 1910, the President approved,

> An act to enable the people of New Mexico to form a constitution and state government and be admitted into the Union on an equal footing with the original states; and to enable the people of Arizona to form a constitution and state government and be admitted into the Union on an equal footing with the original states.

The citizens of these territories thus realized their aspirations of many years; and the fear was removed that they might be forced to accept admission into the Union as a single state—a proposition always unpopular with the people of both territories.

The constitutional convention of Arizona elected under the provisions of the law, met at Phœnix, Ariz., Oct. 11, 1910. It is believed that about ninety days will be required to complete the work of the convention.

The constitutional convention of New Mexico convened at Santa Fé, N. M., Oct. 3, 1910, and adjourned Nov. 21st. The proposed constitution provides for an elective corporation commission to regulate railroads, issue charters, and supervise corporations. Appeals from its rulings go automatically to the State Supreme Court. A referendum clause provides that upon petition of twenty-five per cent of the voters any law may be suspended within ninety days of a legislative session and ten per cent of the voters may submit a law passed by the last legislature to a vote at the next election, while a majority of the legislature may submit constitutional amendments to the people. Prohibition and local option were excluded, but provision is made for the next legislature to handle these questions. A stringent anti-pass section is incorporated. The constitution limits the tax rate to twelve mills for two years and to ten mills thereafter; raises a boundary dispute with Colorado; provides for elective judiciary and state officers; allows women to vote in school elections and to be directors and superintendents; abolishes the fee system in county offices; prohibits separate schools for English-speaking pupils and Spanish-Americans; provides for the payment of $1,000,000 of railroad bond indebtedness by the sale of land grants and makes no distinction against non-English-speaking persons on juries or in county offices.

The constitutions drafted by these two conventions are to be submitted to the people, and if approved will be submitted for the approval of the President and Congress. These territories, if there are no unexpected delays, should become states in 1912.

Alaska.—In his first annual message the President recommended legislation with respect to the territory of Alaska, providing for the appointment by the President of a governor, and an executive council with legislative powers sufficient to enact local laws adapted to the present condition of the territory. The President deprecated legislation looking to the election of a territorial legislature. His recommendation was embodied in bills introduced in the Senate and House. In the Senate the bill was reported and discussed, but there was no vote.

Bills were also introduced providing for a territorial form of government for Alaska, but were not reported by the committees to which they were referred.

In the 1910 election of a territorial delegate from Alaska the campaign turned largely on the question whether there should be a territorial or commission government in Alaska. The sitting delegate was reëlected on a platform recommending a territorial government.

The development of Alaska is retarded by lack of an efficient form of government for the district, and by the deadlock between those favoring the rapid development of the territory and those standing for a strict conservation of its resources. There seems little doubt that the resources of Alaska have attained in the public mind a grandeur out of proportion to the real value of these resources, when their location is considered. While there are great mineral resources in Alaska, investments have not been productive of greater average returns than agricultural investments in the states of the Union.

The exportation of Alaskan products for the last two fiscal years has been as follows:

	1910.	1909.
Gold	$18,275,434	$17,558,839
Fish and fish products	10,404,807	10,824,950
All others	1,949,307	2,239,856

Hawaii. — The only congressional legislation of a general character affecting Hawaii was the act of May 27, 1910, modifying the "act to provide a government for the territory of Hawaii." The effect was: first, to make United States laws carrying general appropriations effective within that territory; second, to increase the pay of the members of the legislature and territorial officials; third, to modify the conditions under which the territory or municipal corporations may contract indebtedness; and fourth, to modify the public land laws.

More important, however, were the liberal appropriations for fortifications and the improvement of Pearl Harbor, which, following the recommendation of the general board of the army and navy, that Pearl Harbor be made the principal point of national defense in the Pacific Ocean, gave to the Islands a military importance which had been much spoken of prior to their annexation, but which has not yet been made effective.

Expenditures for the construction

of the naval base will ultimately amount to $10,000,000. Army posts and fortifications will involve the expenditure of approximately $4,000,000. The Hawaiian Islands have also been made a separate military district and a general officer assigned to the command of the troops there located.

The year has been one of great prosperity in the Islands. There has been, however, a continuation of the difficulty of obtaining suitable labor. The effort to secure laborers from the cane fields of the Philippine Islands offers but small hope of success.

The following table shows the values of the principal local products shipped from the Islands in 1909 and 1910:

	1910.	1909.
Sugar...........	$42,626,069	$37,632,821
Coffee...........	288,423	211,535
Fruit............	1,775,050	1,446,792

Porto Rico.—In Dec., 1909, Hon. J. M. Dickinson, Secretary of War, accompanied by Gen. Clarence R. Edwards, Chief of the Bureau of Insular Affairs, visited the island of Porto Rico to study the condition of the island administration, political, economic, and hygienic, and report to the President such recommendations of changes in the organic law as conditions required.

The secretary found the people of Porto Rico practically unanimous in demanding three changes: first, that citizens of Porto Rico should be made *en masse* citizens of the United States; second, that the executive council of Porto Rico—an appointive body acting as the upper house of the legislature—should be replaced by an elective Senate; and third, that there should be an absolute separation of the executive and legislative functions of the government. While the two political parties in Porto Rico differed on many other questions, they were united on these three propositions.

In several earlier treaties of annexation, as, for instance, that of 1848, the United States Government declared the people of the annexed regions to be citizens; but in the Treaty of Paris of 1899 it was provided that "the civil rights and political status of the native inhabitants of the territories hereby ceded to the United States shall be determined by the Congress." The joint resolution for the annexation of the Hawaiian Islands, July 7, 1898, was also silent upon that subject; but in the act for establishing the territory of Hawaii, April 30, 1900, it is provided, "that all persons who were citizens of the Republic of Hawaii on August twelfth, eighteen hundred and ninety-eight, are hereby declared to be citizens of the United States and citizens of the Territory of Hawaii." The people of Porto Rico as well as those of the Philippines who had not received this privilege are restive under what they feel to be a discrimination.

The secretary of war prepared a bill to amend as he believed necessary the organic law of Porto Rico, in which he embodied with some modifications the three wishes of the people of Porto Rico above enumerated. He recommended that Porto Ricans might become, individually, citizens of the United States without expense upon application to any of the local courts, and taking of the oath of allegiance to the United States; he recommended the creation of a Senate in part elective and in part appointed by the President of the United States; and he recommended the absolute separation of the executive and legislative functions.

The bill was introduced in the House of Representatives and passed that body with certain modifications, but permitting Porto Ricans to become U. S. citizens, providing for an elective senate, and separating the executive from the legislative branch of the government, and, in addition, embodying without important amendment a complete plan for the reorganization of the health department of Porto Rico. This latter feature was the one which the Secretary believed to be of the greatest importance to the people of the island. This bill is now before the Senate.

Progress in Porto Rico during the past year has been marked as shown by the following table of exports:

	Average for 5 Yrs. Preceding 1910.	1910.
Sugar	$15,600,820	$23,545,922
Coffee	3,667,093	5,669,602
Tobacco and its products	5,473,273	5,763,214
Fruit	793,689	1,635,817
Miscellaneous	372,832	1,343,664

The improvement in educational conditions which has marked American rule in the island has continued. The number of pupils enrolled in the public schools in the year was 121,453; in 1899 the enrollment was 25,789. Special effort has been made to instruct pupils theoretically and practically in agriculture, the principal industry of the island.

Health conditions in the island have continued to improve. The number of deaths per thousand for the year was 22.10, a decrease from 30 per thousand, the average during the last ten years of Spanish rule.

The Philippine Islands.—The general condition of peace and order existing for the past few years in the Philippine Islands has continued through 1910.

The structure of the local government of the Philippine Islands is much misunderstood in the United States. Politically the Filipino is already intrusted with a large share in the civil government of the islands; less large, perhaps, in actual power than in semblance of authority, but none the less large. Municipal government everywhere, except in the city of Manila, is in the hands of natives. The administrative unit in the Philippines is the province, and the provincial officers are all natives, elected by the natives, with the sole, if important, exception of the provincial treasurers, who at present are Americans and appointed. In the city of Manila one half of the members, including the president of the municipal board, are Filipinos, but they are appointed, and the administrative authority is reserved for the American members, among whom the headships of the various departments are distributed

In insular affairs the same plan is followed, there being in effect two legislative chambers, of which the upper house consists of the commission of eight members (including the governor general, who sits as a member), all being appointed, four of whom are Filipinos. But the four American members are also heads of executive departments, constituting a cabinet, as well as being members of the upper house, one being secretary of the interior, one secretary of commerce and police, one secretary of finance and justice, and one secretary of public instruction. The lower house, or assembly, is elected on a restricted franchise by which only some twelve per cent of the people are entitled to vote, and consists entirely of Filipinos. The speaker of the assembly, himself a native, has official precedence of all persons in the islands except the governor general and vice governor. No measure becomes law until it has received the sanction of both chambers, and all measures are further subject to veto by the Congress of the United States. The power of the lower house, moreover, is curtailed in the particular in which the strength of a popular assembly commonly resides, namely, the power of the purse; it being provided that if in any year the assembly fails to vote supplies the appropriations of the preceding year shall be automatically continued. Of the seven justices of the supreme court four are Filipinos, including the chief justice. They are appointed.

In his report to the President regarding his visit to the Philippines, Sec. of War Dickinson says:

> There are very many highly educated Filipinos, many men of talent, ability, and brilliancy; but the percentage in comparison with those who are wholly untrained in an understanding of and the exercise of political rights under a republican form of government is so small, and under the best and most rapid development possible under existing conditions will for a long period continue so small, that it is a delusion, if the present policy of control of the islands by the American people shall continue, to encourage the Filipino people in the hope that the administration of the islands will be turned over to them within the time of the present generation.

The practical application of the new tariff relations between the United States and the Philippine Islands effected by the United States and Philippine tariff acts of Aug. 5, 1909, has been observed with great interest.

The loss in insular revenues due to the free admission of American products into the Islands has been much less than was anticipated, and is more than met by an increase in the insular internal revenues. The revenues of the Islands were slightly in excess of the most prosperous previous year.

The only other general legislation affecting the Islands was the act of June 14, 1910, providing for the quadrennial election of members of the Philippine Legislature and resident commissioners to the United States. These elections have heretofore been held every two years. The hope was expressed in passing this legislation that the Philippine Legislature would provide for quadrennial instead of biennial municipal and provincial elections.

The secretary of war and the chief of the bureau of insular affairs of the war department visited the Islands on a tour of inspection July 24 to Sept. 3, 1910.

The Friar Lands.—A controversy has arisen over the sale of certain Friar lands. When the islands were annexed in 1899 large estates were found in possession of bodies of monks who were out of accord with the people, and by the transfer were losing most of their remaining authority. Pres. Taft, then governor, negotiated an arrangement at the Papal Court by which all these estates were taken over by the Insular Government on payment of over $11,000,000. These estates have been offered in small parcels to native holders, but only about 6,000 tracts of the 2,050,000 put on sale have been completely acquired. June 13, 1910, Representative Martin, of Colorado, made an elaborate speech in Congress in which he charged Dean C. Worcester, insular secretary of the interior, Frank W. Carpenter, executive secretary, and also a brother of Sec. Worcester with an illegal purchase of 55,000 acres of these lands; incidentally he held that Atty. Gen. Wickersham and Pres. Taft were silent partners in the iniquity. The question was investigated by W. Cameron Forbes, the Governor of the Islands, and subsequently by Sec. of War Dickinson during his visit; and they agreed that there was no ground for the charge. The purchase was suitable in itself, and had been made on the usual terms under the law.

Progress in the education of the young Filipinos, initiated with American rule, has continued. Pupils enrolled in the public schools during the year numbered 587,317.

The Philippine Islands were not included in the general United States census taken in 1910; the last official census of the Islands was that of the insular government taken in 1903, which shows a total population of 7,635,426.

Exports.—The following table of exports shows the agricultural and commercial conditions through the year as compared with recent years:

	Average for 5 Yrs. Preceding 1910.	1910.
Hemp	$19,164,685	$17,404,922
Copra	4,462,216	9,153,951
Sugar	4,762,671	7,040,690
Tobacco and its products	2,604,384	4,637,495
Other products	1,364,059	1,627,111

Total imports into the Islands in the fiscal year 1910 amounted to $37,067,630, the average for the five preceding years having been $28,834,445.

Guam.—The chief executive of the island continues to be the commander of the naval station. The population of the island is 11,973, of which 11,624 are natives. July 1, 1909, the currency of the island was changed from Mexican to United States currency, and this change has become fully effective. Dec. 10, 1909, occurred the severest earthquake the island has experienced for a number of years. Marked progress is visible in the effort to educate the children and to improve health conditions throughout the island. The water supply system for Agana was practically completed.

Tutuila and Midway Island.—Nothing has occurred in these islands during the year to demand attention.

NONCONTIGUOUS TERRITORY OF THE UNITED STATES

DATES OF ACQUISITION, POPULATION AND AREA

TERRITORY.	Date of Acquisition.	POPULATION.		Area (Square Miles).
		Year.	Number.	
Alaska	June 20, 1867	1900	63,592	590,884
Guam	Apr. 11, 1899	1900	9,000	210
Hawaii	July 7, 1898	1900	154,001	6,449
Panama Canal Zone	Feb. 26, 1904	1909	127,362	474
Philippine Islands	Apr. 11, 1899	1903	7,635,426	115,026
Porto Rico	Apr. 11, 1899	1908	1,062,808	3,435
Tutuila Group, Samoa	Mar. 8, 1900	1902	3,750	77
Total				716,555

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IX. MUNICIPAL GOVERNMENT

Clinton Rogers Woodruff

NEW FORMS OF CITY CHARTERS

The Commission System.—During the past year the most conspicuous single development in the realm of city government has been the rapid and widespread interest in the commission form of municipal government, and in the question of city charter reform generally. This interest in charter building and rebuilding can best be illustrated by citing the fact that within two years the National Municipal League's help was sought by 138 cities. Twenty-six of these were in the North Atlantic group; eighteen in the South Atlantic; forty-three in the Northern Central group; twenty-six in the Southern Central, and twenty-five in the Western and Pacific group—and the list is growing from day to day. These figures show how keenly municipal students and legislators are seeking some solution of the complicated difficulties of the modern municipal problem.

This list includes practically all the larger cities. Massachusetts, New York, and West Virginia have had official investigation of the question. Pennsylvania, Virginia, Illinois, Michigan, and Wisconsin are the scenes of definite, state-wide movements for improved charters in some, if not all, the classes of cities within their borders.

The commission form of municipal government has of all the forms attracted the most attention. The earliest general or national reference to this now very widely discussed form was that made in the report of the secretary of the National Municipal League to its Chicago meeting in April, 1904, when attention was called to the results that had been achieved in Galveston since its inauguration in 1901 of the commission system.

The Galveston Plan.—Very briefly stated, the Galveston plan consists of committing the whole management of the city's affairs to a commission of five men chosen at large by the electors of the city. In effect, the entire responsibility for the administration of the city's business, in all its branches, is directly concentrated upon a very small number of men who cannot easily shift or shirk their obligations or duties.

A straight commission form of government, in the judgment of Dr. C. W. Eliot, one of the leading advocates of the system, requires a commission composed of five elected members, one of whom is called the mayor, and acts as chairman, but has no veto power or any other power not shared by the other members of the commission. The commission so elected is the source of all authority in the city, makes all ordinances, appoints all officials, collects taxes, and makes all appropriations.

Significant features of the plan as set forth by its advocates (in this instance the analysis of the Charleston Community Club is utilized) in addition to those already mentioned are:

Assignment of the important divisions of city government to individual members of the commission, each of whom is directly responsible for the best conduct of his particular department;

Adequate compensation to the members of the commission for their time and labor, the city employing all the commissioners at living salaries, thus elevating the dignity of municipal service and making of it a public career, and not a mere avocation;

Regularity, frequency, and publicity of the meetings of the commissioners;

All employees above the class of day laborers, selected from eligible lists based on examinations, oral and written, carefully devised to determine merit and fitness, recommended after examination by an independent civil service commission;

Provision for the retention in office of all employees so appointed during good behavior;

Power to initiate desired legislation reserved in the people—this right being known as the initiative;

Power to call for a public vote on any measure adopted by the commission, before given effect as law, reserved in the people—this being known as the referendum;

Power, at any time, to make any member of the commission stand for reëlection reserved in the people—this being known as the recall;

The granting of public franchises *always* to be submitted to the people.

There are two other most important features: the introduction of the principle of the short ballot, and the elimination of ward lines. In the judgment of municipal students these (together with the concentration of authority) are *the* most effective features.

The principle of the original Galveston plan, which represents the simplest form, and which has been extended to twenty-one other Texan cities, was taken up by Des Moines, Iowa, in 1907, and expanded to include the expression of the public will through the initiative, the referendum, and the recall, and safeguarded by the application of the merit system to all appointive officers and employees, namely, all officials except the commissioners, and by the nonpartisan open primary. In the words of an advocate of the system, the nonpartisan primary "will eliminate partisan politics in municipal affairs. Civil service will do away with the patronage system. The recall gives the people a club to hold over a dishonest or inefficient official, if such an one should be elected. The provision for the abandonment of the commission after four years does away with the argument that people should not adopt the commission plan because there was no means of getting rid of it if it did not prove successful. The initiative and referendum give the people a direct voice in legislation." The Kansas law has an additional provision that the commissioners must give their entire time to the city, to insure dispatch and efficiency in handling the city's business.

Some idea of the present popularity of the commission form of government may be measured by the extent of its adoption within four years. Iowa, Kansas, North Dakota, South Dakota, Mississippi, Minnesota, Illinois, Wisconsin, South Carolina, Louisiana, Kentucky, and Oklahoma have passed commission laws relating to all or certain classes of cities within their respective borders.

Following is a list of the cities which have adopted one or another form of commission government:[1]

Texas.—Galveston, Houston, Waco, Fort Worth, Austin, Lyford, El Paso, Dallas, Palestine, Kennedy, Denison, Greenville, Sherman, Beaumont, Orange, Aransas Pass, Harlinger, Barry, Amarillo, Corpus Christi, Marshall, San Antonio.

Kansas.—Wellington, Newton, Iola, Neodesha, Kansas City, Leavenworth, Topeka, Wichita, Hutchinson, Independence, Girard, Pittsburg, Abilene, Hiawatha, Marion, Anthony, Coffeyville, Emporia, Parsons, Cherryvale, Pillsbury.

Oklahoma.—Ardmore, Enid, Miami, Tulsa, Muskogee, Bartlesville, McAlester, Duncan, El Reno, Chickasha, Sapulpa.

Iowa.—Des Moines, Cedar Rapids, Keokuk, Burlington, Sioux City, Fort Dodge, Marshalltown.

Massachusetts.—Haverhill, Gloucester, Chelsea, Taunton, Boston (modified.)

South Dakota.—Sioux Falls, Huron, Yankton, Pierre, Vermillion, Dell Rapids, Rapid City, Clarksville, Chamberlain.

Idaho.—Boisé, Lewiston.

North Carolina.—Charlotte (modified form.)

California.—Berkeley, San Diego, Riverside, Modesto.

North Dakota.—Minot, Bismarck, Mandan.

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[1] List revised to Oct. 20, 1910.

Colorado.—Colorado Springs, Grand Junction.
Missouri.—St. Joseph (modified form.)
Washington.—Tacoma, Granger, Seattle, (semi-commission), Walla Walla.
Tennessee.—Memphis, Bristol, Clarksville, Richard City, Etowah.
Mississippi.—Hattiesburg, Clarksdale, Shreveport.
Wisconsin.—Eau Claire.
West Virginia.—Huntingdon, Bluefields.
South Carolina.—Columbia.
Minnesota.—Mankato.
Michigan.—Port Huron.
New Mexico.—Roswell, (at least the city has been formally authorized to adopt the plan.)
Maine.—Auburn.

Discussion of the proposition is country-wide. According to the records of the National Municipal League the question is actively under discussion in one hundred and sixty-five cities, representing twenty-five states. This is a marvelous showing for any new form of government, and indicates, as has already been stated, the hunger of the American municipal citizen for relief from city ills, and for a more efficient form of government.

So rapidly has this movement developed that Galveston, where it had its genesis in 1901, called a "City Commission Congress" for Nov. 21st, 22d, and 23d. The invitation, which was issued by the Galveston Commission, declared:

> The splendid achievements of the commission form of municipal government known as the "Galveston plan," in the striking development and large increase of municipal utilities embraced in the paving, sewerage, extension of water mains and electric lighting; the increased efficiency in our public service in all departments, at a minimum expenditure, has caused every Galvestonian to be pardonably proud.
>
> For ten years past this remarkable progress of Galveston has been a subject of favorable comment, and has excited close scrutiny and intense study of the methods by which these conditions have been reached.
>
> The grave question of municipal reform is rife throughout our country. Noted educators, prominent writers and publicists, have addressed themselves to the elaboration of the "Galveston plan," until the demand for information concerning this form of government, which originated in and was first adopted by this city, has grown so great that the citizens of Galveston, through the mayor-president and city commission and the various commercial bodies, have decided to hold a City Commission Congress."[1]

There are numerous modifications of commission government. In some the terms of all commissioners expire at the same time. In others they expire one each year. In certain cities the voters elect commissioners to have charge of certain departments or bureaus. In others the commissioners themselves divide up the duties. Keokuk, Iowa, has but three commissioners; but the great majority of cities have five.

There are several methods of election. By the nonpartisan primary, as in Des Moines; by the French system of two elections, as in Berkeley, Cal., and by preferential voting, as in Grand Junction, Colo.[2] So far the movement has been confined to the smaller communities. The larger ones adopting it are:

Massachusetts: Gloucester, Haverhill.
Tennessee: Memphis.
Iowa: Burlington, Cedar Rapids, Des Moines, Sioux City.
Kansas: Kansas City, Leavenworth. Wichita, Topeka.
Colorado: Colorado Springs.
Missouri: St. Joseph.
Texas: Austin, Dallas, Fort Worth, Galveston, Houston, Waco.

A number of cities (like Buffalo, N. Y.; Mobile and Birmingham, Ala.) have, through a vote of their electors, expressed a preference for commission governments, but so far have been denied their requests by the state legislatures.

Municipal Home Rule. — Another important and healthy phase of charter development has been the growth of the movement for municipal home rule. As Dr. John A. Fairlie, formerly of the University of Michigan (now of the University of Illinois), and a member of the Michigan Constitutional Convention, pointed out at the Pittsburg meeting of the National Municipal League, during the past decade there has been enacted a vast volume of additional municipal legislation by various methods. Special acts of the state legislature have continued, of course, and form the greatest bulk of this legislation, while for the largest cities special legislation is still the general system. But even in regard to special legislation the principle of home rule has come to be more generally recognized, and most of the special acts have been passed as the result of local initiative, and sometimes as the outcome of organized action in the local community.

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[1] This conference has for local reasons been postponed until May, 1911.

[2] Details of these systems will be found under the head of Electoral Reform.

The Greater New York charter of 1897 and the revision of 1901 were framed by local commissions, and special legislation in that state must, under the constitution of 1894, be submitted to the city authorities, and if disapproved, must be repassed by the legislature. Special legislation for Chicago, authorized by an amendment to the Illinois constitution, is subject to a local referendum; and the general revision of the city charter submitted in 1907 was prepared by a local convention. The general revision of the charter of Grand Rapids, Mich., in 1905, was the result of local discussion and was formulated by the local authorities. The recent special acts establishing the commission plan of city government in Texas cities have been due to the local efforts of the cities. The Kansas, Minnesota, Illinois, Louisiana, Mississippi, Iowa, North Dakota, and South Dakota commission laws give to the cities of those states the power to adopt the law, on their own initiative, at their own convenience.

More significant still, Dr. Fairlie declares, has been the increased number of city charters framed and adopted by the cities themselves under provisions of the state constitutions. To the four states previously authorizing this method, there have been added Colorado in 1902, Oregon in 1906, Oklahoma in 1907, and Michigan in 1908. In the states authorizing this method before 1898 there had been but few cases where the power had been exercised. St. Louis and Kansas City were the only important examples. But in 1898 San Francisco adopted its own charter, and there are now twenty or more home-rule charters in California. In Minnesota about a dozen cities have framed their own charter. Denver acted under the Colorado provision in 1904. In 1909 Colorado Springs did likewise. Its voters chose a charter committee which, sitting like a constitutional convention, drafted a charter (generally following the commission form), and then submitted the result of its labors to the electorate for approval, which it in due time received. This was all done under the "Rush Amendment," which was modeled in terms on the constitutional amendment prepared by the National Municipal League, and forming a part of its municipal program.

Michigan's new constitution distinctly recognizes (and it is the first state east of the Mississippi River to do so) that the charters of cities shall be subject to the general laws of the state, leaving to the legislature the duty of prescribing the detail of the methods by which charters shall be framed and adopted by the electors of the locality to be governed.

General Municipal Laws.—In addition to the tendency toward municipal home rule, Dr. Fairlie has pointed out that there have been enacted in several states during the past decade a number of important general laws on municipal government. In New York a general law for cities of the second class was passed in 1898 and went into force in 1900. A Pennsylvania act of 1901 applied to the three cities of the second class in that State. The Virginia constitution of 1902 contained important provisions on municipal government, and a new general law was enacted the following year. In 1902, owing to a decision of the Supreme Court of Ohio, a general law was passed in that State abolishing the former absurd classification of cities. In 1903 the New Jersey legislature enacted an optional general law. In 1905 a new general law was passed in Indiana, reducing the number of classes of cities to five, and simplifying the system of organization. On the other hand, a commission appointed in

Connecticut in 1905 to consider the question of a general law, reported that this was impracticable.

At first sight such legislation may seem to be in direct conflict with the tendency toward a greater degree of home rule. To some extent these general laws do restrict variations in the form of municipal organization; and the Ohio code particularly imposed a rigid system of boards on large and small cities alike. But the general legislation also prevents arbitrary action by the legislature with regard to particular cities, and its main tendency is toward an increase of municipal autonomy. Under general laws all cities are granted the same powers; and more power is necessarily left to each city to regulate its local affairs than under the system of special legislation. As home-rule charters are in most states subject to the general laws of the state, the two methods tend to produce somewhat similar results. Most of the general laws, however, still prescribe the local organization too much in detail. Municipal home rule has been formally indorsed both by the National Municipal League and the League of American Municipalities, and by a majority of the state leagues of cities.

The Ohio Municipal Code. — Ohio was for years the home of the most legislature-ridden cities in the country. A decision of the Supreme Court in 1901 wiped off the statute books all the specially granted charters. A special session of the legislature enacted a municipal code under which the administrative powers were exercised by a mayor, board of public service of three members, board of public safety of four members, solicitor, auditor, and treasurer. The mayor was the nominal head of the city government, but other than being detailed as "conservator of the peace," and having the power of vote, he had little actual power. The real administrative powers were vested in the board of public service, elective, and the board of public safety, appointive, and to a less degree in the solicitor, auditor, and treasurer.

This municipal code was amended in 1909, and as amended the boards of public service and public safety were abolished as such, and the offices of director of public service and director of public safety created. The two directors are appointed by the mayor, and with him constitute a board of control which, by a record vote, passes upon all matters of importance in either of the two departments of service and safety. In the board of control are centralized all the administrative powers formerly exercised independently by the mayor, the board of public service, and the board of public safety.

The reasons urged for the change were two:

To simplify municipal machinery; simplification of the machinery of municipal government is a prerequisite to reform in municipal government. Numerous boards and officials, partly elective and partly appointive, tend to the confusion of the elector.

To fix executive responsibility; with separate boards and officers exercising various administrative powers and with no clear delimitation of their respective powers in the mind of the voter, responsibility is diffused and accountability is lost.

The St. Paul Plan. — St. Paul's charter commission, in the latter part of 1909, had under consideration a plan of city government that would have attracted considerable attention, representing, as it does, a modification of the commission form of government, had it been strongly urged. Its proponents contended that in a great measure it obviated the criticisms that have been leveled at the commission form of government. In the first place it eliminated the municipal court from the scheme of city government. This it did, not only because the provisions of the Minnesota constitution forbid, but because the authors of the plan felt that the judiciary should be separated from city government, or at least that the judges should be directly elected by the people instead of appointed by the commission. The new features of the St. Paul plan were as follows:

A small common council, to be composed of the commissioners, four councilmen elected for a term of four years, and the city comptroller. The reasons urged for this were: First, it created an appropriating body larger than the commission itself; secondly, the four councilmen were to be made county commissioners of the County of Ramsey, in which St. Paul is located, thus uniting in a way county and city. St. Paul pays ninety-seven per cent of the county taxes.

Another novelty of the plan was the creation of two kinds of boards of aldermen, one a general board, composed of all the aldermen elected, namely, one from each precinct in the city, of which there are 120. This general board, which was to meet quarterly, was to be intrusted with the duty of periodically inspecting every department of the city government, and reporting its findings and conclusions to the commission, together with suggestions and recommendations for a more efficient, economical and better conduct of the city government and its policies. Moreover, this general board of aldermen might suspend any elective or appointive officer for a period of thirty days. Its principal function, however, was in connection with the budget. After the budget was passed by the common council the same was to be submitted to the general board for approval and adoption at a special meeting called especially for that purpose. The board might decrease or reject any item of the budget, but not increase or reapportion the same. It was charged with the approval of new franchises and the modification or extension of existing franchises.

Aldermen elected from the various precincts might also serve in their respective wards as a ward board, with merely critical and recommendatory powers. At the deliberations of this ward board the citizens might be present and participate in the debate. but were to have no vote. This idea is partly taken from the Newport plan. The end in view is that of creating a large body of men who will take an active interest in municipal affairs by reason of their position. It is also expected to afford a field for ambitious men to fit themselves for election to the commission

Another feature of the plan was the provision for the election of the comptroller by the voters at large. Under most commission forms he is appointed by the commission. This provision was to answer the objection of having the auditing officer dependent on the commission.

The Boston Charter.—Boston's new charter, providing for a powerful mayor and a small but comparatively insignificant council, went into effect in Jan., 1910. It provides for a substantial separation of the appropriating and expending bodies, in which particular it is held to be a distinct improvement over the commission government, where the mingling of these two functions constitutes a practice which so far in our history has received very little acceptance at the hands of American students of government, and forms an interesting experiment in this field, which is being closely watched.

The Newport Charter.—Newport's charter, which is generally regarded as representing the antithesis of the commission form of government, is also producing results, which are comparable with those secured under the latter system, and which are locally regarded as quite as satisfactory. The fact is that good results are being more generally secured because of a more alert public interest, as well as because of a more simple and responsive form of government.

The Pittsburgh Plan.—Pittsburgh proposes a new form of government, the main features of which are: The mayor and his duties and powers remain unchanged; the council is to consist of nine men constituting one legislative body, to be nominated and elected at large to serve four years, four elected at one time and five at another, their compensation to be $6,500. This council is to have power to fix compensation of all city officials, but no elective officer is to have his salary changed during the term for which he is elected. A referendum possible on all ordinances upon petition of ten per cent of the voters at the last election; the initiative to be granted upon proposed ordinances upon petition of fifteen per cent of the voters at the last election; the initiative to be submitted to vote upon petition of twenty-five per cent of the voters; the nominations to be made by petition of five per cent of voters; the ballot to be nonpartisan, with no party names or symbols; names on ballots to be arranged in order determined by lot.

West Virginia Code Commission.—West Virginia has had a municipal code commission at work for a number of months. In its report just published provision is made for several forms of municipal government, any form, in fact, that may be desired by the people of any municipality. The governing bodies may be elected upon purely political lines, or there may be non-partisan governments, bipartisan governments, administrations under the immediate control of one man or directed by a commission, this question being under the immediate control of the voters of the municipality. The present governing body of any municipality has the right, under the proposed law, of naming a charter commission who, in turn, may submit to a vote of the people either of the various forms of government above outlined. The method of taxation, the granting of franchises, ordinances, elections, registration, duties of officers, and collection and disbursement of the funds of the municipality, however, are all definitely fixed by the proposed law, and cannot be changed, being incorporated in the general law delegating authority to all municipal governing bodies. Generally speaking, the proposed code increases the charter powers, centralizes power and responsibility, and reduces the number of elective officers.

The Oakland Code.—As the result of a recent special election, Oakland, Cal., is to have a new municipal code. The Citizens' Progressive Party, which won the election, in its before-election platform advocated the following: A commission form of government with the mayor elected by the people; the initiative and referendum and recall with such fair percentages as will most facilitate their use for the control of franchises and for effective self-government by the people; the acquisition, ownership and operation of public utilities by the city; the disposal of public franchises only on a basis which will insure to the city a just return on the value of the privilege granted; the exercise of civil-service reform in all municipal departments; the short ballot in the interest of intelligent choice by the electorate; the holding of direct primary nonpartisan elections, the rotation of names on the ballots at all elections and the abolition of ward lines.

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In addition to a very considerable pamphlet literature, the more important of which are *The Story of the Short Ballot Cities*, *Commission Government in Pennsylvania*, *Boston Economic Club Discussions*, John J. Hamilton has told in effective fashion in his book, entitled *The Dethronement of the City Boss*, the interesting story of the actual operation of the Des Moines commission charter.

MUNICIPAL TAXATION

Cities in the United States are allowed practically no latitude by their state governments in matters of taxation, and the constitutions of about three quarters of the states require the uniform taxation of all property under what is known as the "general property tax system." Consequently, there are few changes in the statute laws governing municipal taxation.

In some respects the most recent significant occurrence was the introduction in the New York Legislature of a bill asked for by the city administration and the New York Merchants' Association, to exempt from taxation personal property in the city of New York. Although the request was not granted, it was generally regarded as an official recognition of the breakdown of the local taxation of personal property.

There has been a general tendency toward improvement in administrative methods in cities, especially in connection with the assessment of real estate. While this is usually regulated by state law, considerable latitude is allowed.

Canada.—The most notable changes in municipal taxation are occurring in Canada, where, in several provinces, cities have been allowed a large measure of home rule. In British Columbia a general statute has for many years permitted municipalities to assess improvements at a lower percentage than land. A recent statute fixed a maximum assessment of fifty per cent for improvements, while allowing a lower rate, or the entire exemption, by vote of the local council.

In the Province of Alberta, the larger cities have for some years exempted improvements, raising their revenue chiefly from the tax on land values, with a slight business tax, and a tax on franchises of public service corporations when not municipally owned. Most of the new villages asking for incorporation are also requesting this same power of exemption, which is granted upon petition to the provincial authorities.

In Ontario the local taxation of personal property was abolished in 1903, a business tax being substituted. At the present session of the Provincial legislature a petition was presented, signed officially by over two hundred municipalities, asking for the same right of home rule in the partial or total exemption of improvements as exists in British Columbia.

In Vancouver, according to local authorities, the abolition of taxes on improvements has caused great activity in local building operations. On the other hand, there has been stagnation in the real estate market so far as vacant lots are concerned. The experiment has not gone on long enough to be sure that this may not be due to some local or temporary cause; but it is the result single taxers expect from the policy adopted. The policy has prevailed among the municipalities of the Canadian West to value sites at par and improvements at a fraction ranging from seventy-five per cent down to twenty-five per cent. For some years Vancouver had it at seventy-five, then dropped to fifty, then to twenty-five, and last March to zero. Several other cities in British Columbia have followed a similar policy. Nanaimo has had the 100 to zero percentage for several years. There is a strong popular movement in Ontario in this same general direction. It has been opposed so far by the party in power in the province. It is being strongly supported by the Ottawa *Citizen* and other daily papers under the same ownership, and by a large number of civic organizations. A year ago the formal appeal of the city of Ottawa was denied by the Provincial Legislature because the government "did not care to give that city any advantage over other cities."

Prince Rupert is said to be starting its municipal career without taxing improvements. Vancouver and Prince Rupert are probably destined to grow with tremendous rapidity. Doubtless they would grow tremendously if they had the worst system of taxation in the world, because they are the ports of Western Canada and the terminals of great railway systems; but by the policy of not penalizing improvements they are certain to grow, in the judgment of tax reformers, with greater rapidity, and land speculation will be discouraged, to the advantage of the growing communities. In ten years' time it is expected that those cities will be big enough to attract the attention of the United States. If they adhere to the present policy it must exert powerful influence in the State of Washington, and probably Oregon.

Manhattan.—New York City has a committee on congestion of population that is said to be reaching the conclusion that the most important thing to do is to increase the tax on land values and decrease the tax on improvements. "It does not seem," one prominent official has said, "that any intelligent man regarding the conditions which now exist in New York could reach any other conclusion." The Borough of Queens contains about 129 square miles; it has about 115,000 separately assessed parcels of real estate, of which 73,000 are unimproved. The assessed land value of Queens is $200,000,000. The assessed value of the unimproved parcels is $100,000,000. In this classification a farm with a house on it is rated as an improved parcel. In fact, any lot to which any value whatever is added for improvements is rated as an improved parcel. The per capita value of land in Queens is out of all proportion to the per capita value of land in the other boroughs, being $776, as compared with $718 in the Bronx; $375 in Brooklyn, and $1,201 in Manhattan. Manhattan values are the result of the dense population and, one may say, of the activities of the whole world. Tax reformers are beginning to declare that it does not take much imagination to see what would happen in Queens if the city of New York adopted the policy of Vancouver. (See also XII, *Budget Making.*)

MUNICIPAL FRANCHISES

Franchise questions continue to attract the attention of municipal administrators, legislators, and students. The experiments that are working out in Massachusetts, Wisconsin, and New York in the matter of the state control of franchises are being watched with great attention, and studied by those working for the solution of this important phase of the municipal problem.

A leading official of one of the state commissions, who, although a firm believer in the principle of municipal ownership and operation of all utilities like transportation, water, gas, electric light and telephones, has expressed the opinion that municipal administrations are now quite neglectful in the performance of many of the functions that they already have, and that there is no adequate municipal machinery at hand ready for the operation by the city of these utilities. This machinery, perhaps, could be easily and quickly provided if the conviction that public ownership was the best policy should really take hold of a community to the extent of overcoming the present antagonism of those who have had experience in operating public utilities and other men of large affairs who have been associated with them in the advancement of private enterprises.

When, however, it is necessary to establish municipal ownership in the teeth of the most determined opposition of the men best qualified to operate public utilities, it is a matter of necessity that the city should prepare itself by gradually building up the machinery necessary for success in case municipal ownership and operation are attained.

Aside from its bearing upon the ultimate question of ownership, however, the plan of having a commission with authority to investigate complaints and correct evils which may arise is a measure calculated to protect in a considerable degree the public interests in utilities. Great reforms are accomplished only when men's spirits have been overcome and their point of view and attitude changed. One of the greatest needs just now in this connection is to compel, by whatever legitimate means are necessary, the frank and full admission on the part of franchise holders and public utility companies that they are public servants and are exercising a public function. The establishment of commissions to look after the utilities, to supervise the drafting of franchises, to furnish information to other authorities, has come to be regarded as a most excellent means to the accomplishment of this end.

State and Municipal Commissions.—Much might be said, and before these questions are finally settled will be said, on the relative merits of state and local utility commissions. So far as control of stock ownership and bond issues is concerned, the matter may best be left to commissions having authority directly from the state, for such questions are of much more than local interest. The control of transportation systems in large measure should be left to state commissions, for the reason that the development of interurban street railway traffic and suburban electric traffic under what were organized as steam railroads, has made the control of the transportation problem by any single urban community practically impossible. This is particularly true of the smaller cities and country towns.

One fact must be steadily kept in mind in reference to public service commissions. Their creation does not mean the assumption by the state of any new power over the public service corporations. The legislature almost invariably has had the power to regulate them as to rates and the kind of service they must furnish to the public. The trouble heretofore has not been so much with the legal power to do these things; but with the question of the practicability to exercise that power to the best interests of all concerned.

In the very nature of the case it is impossible and impracticable for a legislature either to make the necessary inquiry or to maintain the continuous supervision, or even to arrive at an intelligent judgment on these necessarily intricate matters. When we add to this the fact that the division of responsibility among a hundred or more persons greatly increases the chance of corruption and favoritism, we see how hopeless honest, intelligent and competent control by a legislature must be. After years of floundering between scandalous subserviency to corporations on the one hand, and ignorant or vicious or dishonest attacks upon them on the other, the progressive communities of the country have recently been coming to the inevitable conclusion that to get this business of the people attended to promptly and satisfactorily, it is necessary to intrust it to small, well paid commissions of competent men charged with adequate power and responsibility.

The McAdoo Tunnels.—The opening of the McAdoo tunnels between New York and Jersey City represents a great engineering achievement, and what is still more important and significant a new policy in dealing with the public. At the formal opening Mr. McAdoo, who was the genius that conceived the idea of the tunnels and organized their construction, declared: "We believe in the 'public be pleased' policy, as opposed to that of the 'public be damned.' We believe that railway is best which serves the people best; that decent treatment of the public evokes decent treatment from the public; that recognition by the corporation of the just rights of the people results in recognition by the people of the just right of the corporation. A square deal for the people, and a square deal for the corporation. The latter is as essential as the former, and they are not impossible."

Wisconsin.—The Wisconsin public utilities commission has recently handed down several decisions likely to prove of far-reaching importance. The theory underlying the Wisconsin public utilities law is that rates shall be reasonable, and at the same time, yield a reasonable return on the investment, and the commission is given the power to fix the rates to secure these ends. It has been called upon to determine what the investment actually is, and on one phase of this it has handed down a decision to the effect that, generally speaking, it is undoubtedly true "that the greatest amount of justice is done when abnormal conditions are eliminated," and that "a plant should be given no greater consideration when unreasonably high than when it was had at a bargain"; certainly a common-sense view to take.

On these matters the commission holds in effect that the value to be allowed a public utility corporation must be closely associated with cost, with investment made with reasonable wisdom, and may not include any fictitious figures set up by companies as value and supported on the ground of earnings, or on the ground of manifestly unwise expenditures, nor yet on the ground of fictitious costs or liabilities involved in "expert" financiering.

Telephone Rates.—Some of the corporations claimed that the franchises which they had secured for the cities should be taken into consideration in fixing the value and the rates, the same as machinery, buildings, and other physical property. In the case of Payne and others of Marinette against the Wisconsin Telephone Company, involving the charge that telephone rates at Marinette were excessive, and that they had been unlawfully raised, the commission ruled that no franchise value can be allowed in Wisconsin as attaching to telephone properties for the purpose of fixing rates. While good-will value might be allowed, owing to the contemplation of telephone utilities as competitive enterprises rather than as monopolistic enterprises, no good-will value will be allowed for rate-making purposes unless the competition is *actually* present, not merely possible through the chance that a competitive telephone exchange may be established.

Recognizing a value corresponding to what the corporations generally claim under the head of "going concern" value, or cost of securing an established business, although none was allowed in the Marinette case, the commission said: "The value of a going concern is generally greater than the sum of the value of the separate physical parts of the plant. The seller of such a plant is in a position to exact more and the purchaser would generally be willing to pay more than for a plant which has no established business.

"In expropriation proceedings, likewise, the owner or owners of a plant which is a going concern, would doubtless be awarded a larger amount of damages than the owner or owners of a plant which has not yet been placed upon a going basis. But this 'more' in the value of a plant in the case of purchase and sale or expropriation is not a matter in which the public is interested in proceedings of this kind. This 'more' is not property used and useful for the convenience of the public within the means of the statute. On the other hand, if property is devoted to the public use and reasonable care has been exercised in all the phases of its management, but the owners have not yet received a fair return during the earlier years of the operation of the plant in which the property is used for the convenience of the public, the deficits thus incurred must be made up out of later earnings in so far as this is commercially possible and expedient.

"In other words, every effort honestly put forth, every dollar properly expended, and every obligation legitimately incurred in the establishment of an efficient public utility business, must be taken into consideration in the making of rates for such business. Collectively, the elements just referred to may be designated by the term 'going value,' and in this sense there can be no question regarding the propriety and justice of admitting going value as a consideration in the determination of rates. Whether this going value should be made a part of the permanent capitalization of the plant or provided for by means of a sinking fund or other fund, is a matter to be decided on the facts of each particular case. If it is made a part of the capital investment, it becomes a permanent charge against consumers for all time to come. If it is provided for by means of a sinking fund, persons who are patrons of the plant during the period in which the sinking fund is accumulated will alone contribute." (See XI, *Public Service Commission.*)

A new attitude is being assumed by investors toward such commissions. This was reflected in an address by Pres. Frank A. Vanderlip, of the City National Bank of New York, before the American Electric Light Association, meeting at Atlantic City, in which he pointed out that "we are, on the whole, a very sensible people. We believe in initiative, and do not care to have great business enterprises dominated by red tape. The public wants fair play, and is in a position to demand and get it. Intelligent management of properties will recognize that those that give freely to their customers good service at a reasonable cost will, I believe, have little cause to complain of unfair treatment at the hands of legislators or commissions. The commission that demands only fair and reasonable treatment of the consumer, and in return secures the corporation from piratical attack of competitors organized only to be bought out, will in the end prove a bulwark to the security holder."

The Cleveland Situation. — Cleveland during the past year has settled its street railway affairs. Three years ago the Municipal Traction Company was formed by Mayor Johnson as a holding company. It was to be managed by a board of independent trustees who would operate the street cars not for private profit, but for the benefit of the citizens. It seemed to many who had followed the situation that if the street-railway problem of Cleveland, which was typical of that of many other cities in the country, could be settled on this basis, it would be a great step in advance in the management of all public utilities. The experiment failed, however, and the Municipal

Traction Company became hopelessly bankrupt, and its affairs placed in the hands of a receiver appointed by the Federal courts.

Without going into detail in regard to the causes of this failure and of the complications incident thereto, suffice it to say that a plan, proposed by Judge Tayler of the Federal court and backed by the Cleveland Chamber of Commerce for the settlement of all the difficulties, and enabling all the street-car lines of the city to be run at a uniform fare which should rise or fall in accordance with the net earnings of the company, limited by the plan itself to six per cent, was defeated by Mayor Johnson. In turn, the latter proposed an alternative plan, which was submitted to the people on a referendum vote and defeated, the vote being 35,000 to 31,000. The plan suggested by Judge Tayler was then taken up and was made the basis of a final settlement of the long-pending difficulties.

Mayor Johnson's defeat for reelection as Mayor of Cleveland on Nov. 2, 1909, was in the opinion of many due to his having opposed any plan of settlement other than those which he originated. In the Aug., 1909, campaign many of those who had theretofore supported him on every occasion worked and voted against him. One of these, the Cleveland *Plain Dealer*, in its last word of advice to voters on Aug. 2d, declared:

> The people of Cleveland, who last fall so unmistakably expressed their disapproval of Johnson traction management, have the power to check the mayor's advance and to compel a settlement in accordance with the Tayler plan. The *Plain Dealer*, while recognizing Mr. Johnson's ability and personal integrity, and appreciating the good he has done for Cleveland during his four terms as mayor, feels that at this time the only course open to thinking citizens is to express disapproval of the program that contains so little of promise and so much of menace to the city's interests. The *Plain Dealer* believes that the voters, who by this time have acquired a fair understanding of the questions at issue, will vote against a franchise with an unworkable rate of fare, a franchise for a system that cannot be built, a franchise that is admittedly a "club," a franchise that means an indefinite continuation of hostilities in which the people should recognize that Mayor Johnson no longer stands for their best interests.
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> When Mayor Johnson brought the Cleveland railway to the point of accepting the Tayler plan he had won his final victory in behalf of the car riders. He now seeks to reject the fruits of this victory. The people, by voting down the Schmidt grant, can make good their demand that the mayor give them the benefits that he and they, fighting together, have won.

The settlement went into effect about March 1st last. Since then the wages of the men have been increased, in the judgment of some almost abnormally, making them higher than in any of the large cities within 300 miles of Cleveland. The three-cent fare with one cent for transfer has thus far stood the strain. In the opinion of those who have followed the situation carefully, the most serious danger facing the continuance of this low fare arises from the fact that, although the settlement provided five cents per car mile for maintenance and depreciation, which is more than is expended by any street railway in the United States with possibly two or three exceptions, the company has hitherto kept the road in a somewhat run-down condition, and will endeavor to have arbitration under the lease for the raising of the rate per car mile in order to improve the road out of the maintenance fund, as it claims the franchise permits. If this is done, fares will probably have to be raised somewhat for a year or two.

Indianapolis is working out an interesting experiment in the matter of gas through a competitive service. The Citizen's Gas Company, organized by public-spirited citizens, began operations in a small way in April, 1909, and met with considerable success in securing business. The Indianapolis Gas Company endeavored to meet the competition by a sliding scale of prices, making the prices for comparatively large consumers the same as the prices of the Citizen's Gas Company for all consumers.

The Eighty-cent Gas Rate Case.—Two recent opinions of the Supreme Court of the United States have affirmed the right of state and municipal legislature to regulate the rates charged for public service by privately owned corporations: the "Eighty-cent Gas" rate case in New York and the "Knoxville Birdsong" water rate case. The New York Legislature in 1906 ordered the Consolidated Gas Company to reduce its rate for gas from $1 to 80 cents a thousand. The company obtained an injunction against the enforcement of these rates, coupled, however, with the provision that it should hand over to the representatives of the court the difference between the rates charged and those fixed by the legislature, to be distributed in accordance with the decision of the highest court. In substance, the supreme court declared that the controversy has been brought prematurely, and that it could not pronounce upon the constitutionality of the law. As to whether the law is constitutional or not depends upon the question whether the law actually in practice confiscates property. The only way to find that out is to try the law. The litigating company was advised to go back and try the experiment and ascertain whether a rate law will deprive the corporation of its rightful income.

In its memorandum accompanying the decision the court enunciated certain rules which would guide it in determining whether a rate was just or not. One rule was that in this case under the circumstances the rates charged should allow a return of at least six per cent upon the value of the company's property. If the company should receive that percentage it would get all that as a monopoly it could demand. In estimating the value of that property the court maintained that the amount on which this percentage is to be reckoned should include the value of the franchises, as that value had been accepted by the state.

As the state had never questioned the valuation of the company's capital stock, as it was fixed by the constituent companies when they were consolidated, the state should not now, the court maintained, be heard to question that valuation. This rule implies that if a state for taxing purposes appraises a franchise and lays a property tax upon it, then the state must allow the company that holds the franchise to collect from the rate payers interest upon it. Such a rule would make franchise taxation unpopular if not impracticable; for what the utility company pays to the state in taxes it would collect many times over in the increase of rates sufficient to make up a six per cent income on the franchise. In substance the court has said a state cannot regard a franchise as private property for the purposes of taxation without allowing the owner of the franchise to regard it as private property for the purpose of dividends.

The Knoxville Water Rate Case.—In the Knoxville water rate case the court stated that "the function of rate making is purely legislative in its character; and this is true whether it is exercised directly by the legislature itself or by some subordinate or administrative body to whom the power of fixing rates in detail has been delegated. The completed act derives its authority from the legislature, and must be regarded as an exercise of the legislative power. . . . Regulation of public-service corporations which perform their duties under conditions of necessary monopoly will occur with greater frequency as time goes on. It is a delicate and dangerous function, and ought to be exercised with a keen sense of justice on the part of the regulating body, met by a frank disclosure on the part of the company to be regulated. Courts ought not to bear the whole burden of saving property from confiscation, though they will not be found wanting where the proof is clear. Legislatures and subordinate bodies to whom legislative power has been delegated ought to do their part. . . . On the other hand, the companies to be regulated will find it to their lasting interest to furnish freely the information upon which a just regulation can be based." (See V, *Law and Jurisprudence.*)

"High Finance."—One of the most significant developments of the past year in connection with franchises was the institution of a suit in March last by the receiver of the New York City Railway Company to recover from the Metropolitan Securities Company directors the sum of $2,797,100 lost from treasuries of the

City Railway Company between 1902 and 1904 by the discount of its ten-year notes at 70 and their early redemption at par. The same directors also have been compelled to pay back other large sums of money, the exact amount of which has not been publicly disclosed, in settlement of their "high finance" methods.

That exploits in "high finance" among public-service corporations, such as the wrecking and making of traction properties in New York City, were not confined to the metropolis, but have been widespread and reached into the affairs of many of the small corporations, has been shown by the investigation of the New York Public Utilities Commission, No. 2. As a result of Gov. Hughes's far-seeing policy the franchise problem in New York cities is being placed upon a higher and more substantial plane. The law is now firmly intrenched and among the solidest of the statutes of the state. "Generally speaking," declares the secretary of the Commission No. 2, "the opinion of the people of the state without any considerable exceptions, and of the corporation managers, is that the great powers of the statute have been wisely administered by the commission. There can be no reason why each succeeding year will not add to the usefulness of the work which can be accomplished under the law, and great benefit accrue alike to the corporations and to the public which they serve. . . . The provision of capitalization has had but one effect, that of enforcing sound and honorable principles in corporate management. It is the fact, repeatedly testified to before the commissions, that securities authorized by commissions command a premium from the bond houses and investors."

Chicago and Detroit are still at work upon their street-railway problems. The Minneapolis gas situation has been cleaned up satisfactorily in the interests of the public, and Kansas City has defeated a proposal to extend its street-railway franchises for an undue time.

Denver seems to be in the way of settling its long-pending water question. At a regular city election held May 17th the franchise offered by the Denver Union Water Company was defeated by about 5,000 majority. At the same election an amendment to the charter of the city was adopted by a majority something over 2,000. This provided that three persons therein named shall constitute a public utilities commission for terms of two, four, and six years respectively, and that it shall be their duty to offer the water company $7,000,000 in bonds of the city as a compromise. This is estimated to be much in excess of the real value of the plant, some of which is now over twenty years old. If this offer should not be accepted, then the commission was authorized to proceed to construct a new plant, and for that purpose, or in the event of the acceptance of the offered price, then for use in payment and repair, the question should be submitted to the people of voting $8,000,000 in bonds at a special election to be held on the first Tuesday in Sept. The company refused the offer of $7,000,000 in bonds, and is negotiating with the commission for a further settlement.

San Francisco adopted, by a vote of 31,185 for to 11,694 against, the proposition known as the Geary street bond issue to enable the city to operate a trunk line of considerable importance. Public opinion was somewhat divided over the proposition, but the majority voted for the bonds, not because they were primarily in favor of municipal operation, but because they were so much irritated by the poor service given by the United Railroads, which operates most of the lines in the city. As usually happens in such cases, the whole matter has been thrown into the courts through an effort by one of the parties operating the present road to enjoin the city from selling the bonds as authorized.

Street-car Traffic.—An interesting development of the two past years has been the education of the public in what they had a right to expect in the way of improved public service, especially in the matter of street-railway transportation. A street-railway exhibit, arranged by the New York City Club, has been an important factor in this connection. Originally designed for New York, it has been exhibited in Pittsburg, Philadelphia, and elsewhere, and has tended to show how the safety, hygiene, and comfort of the people can be materially increased with a very little additional expenditure on the part of the corporations. Few electric railways in America furnish every passenger with a seat in the rush hours; and yet this is done every day in most of the large European cities. The handling of the street-car traffic is now a matter of considerable inconvenience, in which the comfort of the traveling public is but little considered. The exhibit showed how, through double-deck cars and side doors, more economical and efficient handling of passengers could be brought about.

Although America has the reputation of being a progressive country, the exhibit showed that the Germans have improved on even the model Berlin elevated railroad in the suspended railway, so long successful in the cities of Barmen and Elberfeld. The exhibit showed how the well-known Liverpool fender so well subserved its purpose that it had an unbroken record of seven years without a single accident. It also set forth methods of reducing the noise from cars, and various other details. As a result of such education the people are bound to become more exacting in their demands on the corporations in the matter of facilities offered them. If the McAdoo principle of the "public be pleased" were more generally followed, there would be less ground for reasonable complaint.

Regulation of Liquor Selling.—In the matter of the control or regulation of the liquor question in the cities there has been little new legislation, but there has been a very considerable amount of intelligent discussion of the question both among public officials and students. Speaking generally, there are beginning to be seen signs of some reaction against state-wide and enforced prohibition, which may be traced to the difficult situations created by such a policy in many communities.

A decision of far-reaching importance deserving mention in this connection was that of the Supreme Court of Illinois in the case of *United States of America*, appellant *vs. Lewis Hrasky*, appellee, in which the court held that a person who has knowingly and habitually violated the Sunday closing law of the state had not behaved "as a man of good moral character," and as one "well disposed to the good order of the people." Consequently the appellee who, it was conceded, had followed the common practice of saloonkeepers in East St. Louis, and had persistently sold liquor on Sunday contrary to the law, was held to be an undesirable citizen, and as such not entitled to be naturalized. The court, in its opinion, declared:

> It is essential to the safety and perpetuity of government that laws should be observed and enforced until repealed. The decision as to the wisdom of the Sunday closing statute rests with the legislature and not with the courts. As long as it is the law it should be observed. The courts should not be, and as a rule are not, charged with executive or legislative functions, but they are charged with the responsibility of deciding, when the question is properly presented, that a law is in force even if it is not observed by all citizens or enforced by all public authorities.

CITY PLANNING

Frederic Law Olmsted, in his address at the Rochester Conference on City Planning, in May, clearly demonstrated that there is hardly one of the principal phases of the subject that has not been represented as a practical art ever since cities themselves began to be; and that as a science, as a subject for theoretical discussion, it is probably but little less ancient. Nevertheless a conference like the one at Rochester is a new sort of thing, and there is something new about the subject to account for such a conference.

"City planning" is a phrase of recent use, and its appearance in our modern civic phraseology is significant of the changed attitude of civic workers toward the problem they are attacking. It connotes intelligent forethought and definite effort. Although but recently introduced, it has already been given an enlarged connotation. At first including plans relating to the physical side of the city's development, it has now come to mean not only this, but to include planning for the intellectual, the moral, the industrial, the commercial, and the economic development of the city, as well as the physical.

Mr. Olmsted, in his Rochester paper, pointed out:

> The complex unity, the appalling breadth and ramification of real city planning is being borne in upon us as never before, and one of the main purposes of this conference is to assist workers in all the different parts of this complex field to understand these interrelationships more clearly. The idea of city planning is one in which all these activities—all the plannings that shape each one of the fragments that go to make up the physical city—shall be so harmonized as to reduce the conflict of purposes and the waste of constructive effort to a minimum, and thus secure for the people of the city conditions adapted to their attaining the maximum of productive efficiency, of health, and of enjoyment of life.

Mr. Olmsted outlines three divisions of city planning, which in the main were observed in the Rochester program. The first concerns circulation, the construction and treatment of the spaces devoted to streets, railways, waterways, and all means of transportation and communication; the second includes public properties; and the third consists of all that remains in private ownership, which is subject to public control in several ways.

Naturally the question of congestion of population came in for considerable attention at Rochester. The secretary of the new National Housing Association advanced the view that there can be no hard-and-fast rule as to the number of people living on a given area, because so many conditions enter into the question of proper housing. He laid stress, however, on the fact that the overcrowding in the foreign quarters of large cities is due to the desire for wealth. The foreigner comes to America as the "land of promise," and for at least the first ten years dreams of going back to his fatherland wealthy, so he denies himself proper housing in order that he may save more money. This difficulty can be done away with by instilling higher ideals into the minds of these foreigners.

The secretary of the New York City committee on congestion, on the other hand, maintained that the causes of congestion of population were economic and administrative, and largely the outcome of a system of *laissez faire*, and that to the extent to which the causes of congestion are economic the remedies must be economic; in so far as the causes are administrative they must be prevented by agents in administrative measures; and, "since congestion is primarily the result of protected privilege and exploitation, the police power of the state must be extended and enlarged to deal with those whose exploitation is in any way responsible for the evil of congestion, with all the human suffering, physical deterioration, and moral danger which congestion promotes and connotes."

Following this suggestion Senator F. C. Howe, of Cleveland, declared:

> Without any reservation, I have come to the conclusion that the orderly and symmetrical building of cities and the housing of urban population can be corrected through the taxation of land values more easily and more fundamentally than in any other way. By the taxation of land values I mean the abandonment of all taxes now levied against houses, buildings, improvements of all kinds, machinery, goods, stock in trade, and personal property of every kind and description, and the dropping of all local taxes on the value of the land. I do not mean that we shall tax land, but rather the rental value of land. In other words, that all the revenues of the city shall be taken from the ground or land rent as it is commonly done by private individuals, under the ground-rent system, in the business centers of our large cities.

Conferences and Congresses.—A town-planning conference was held in London, Oct. 10th–15th, under the auspices of the Royal Institute of British Architects. The passage of the British Housing and Town Planning act of 1909 rendered the careful consideration of the architectural development of town planning a matter of immediate and paramount importance. The conference therefore devoted itself especially to the study of the questions involved in the improvement and extension of cities, with special reference to the artistic and constructional problems involved. Among the topics discussed were: Cities of the past, the present, and the future; city development and extension; open spaces; the restraint of advertising; the city survey as preliminary to city reparation and city development. The honorary president of the conference was the Rt. Hon. John Burns, M.P., the head of the local government board.

In Vienna the Ninth International Housing Congress was held. The other eight congresses were held in the following places and years: Paris, 1889; Antwerp, 1894; Bordeaux, 1895; Brussels, 1897; Paris, 1900; Düsseldorf, 1902; Liege, 1905, and London, 1907. Among the subjects considered at the Vienna congress were town planning; house building; the cottage *vs.* the block; cost of dwellings; the land question; housing inspection; housing finance and taxation; all of which, in some form or another, appear upon the programs of the Rochester and London meetings.

A local city planning congress was held in Los Angeles in Nov. which was highly successful in arousing interest in that section of the country. The keynote of this meeting is to be found in the following declaration of one of the speakers:

> Because of the old-time method of city planning congestion resulted. Congestion of people and workshops causes enormous and needless expenditure on the part of the city for the care of victims of preventable diseases and accidents. A large percentage of crime is traceable to the bad environment of the congested area.
>
> The world is learning that it is cheaper to break up congestion and change the environment than to allow the slums to build bigger jails and hospitals and almshouses.

Berlin.—The city of Berlin, in the latter part of 1909, asked for competitive plans for a comprehensive street and building system to provide for the future growth of the city. The leading architects, artists, and city experts of Germany engaged in the competition, and a public exhibition of their plans was given. As this afforded opportunity for a more extensive exhibition of city planning, it was decided to make the exhibition international; and plans, photographs, and models from a number of countries were assembled in Berlin in the spring of 1910. This exhibition was attended by visitors from England and continental countries and America. A number of cities asked that the exhibits might be sent to them for exhibition purposes, and it was finally arranged that this should be done in the cases of Düsseldorf, Antwerp, and London.

Germany undoubtedly leads in the scientific study of city housing, and England in the development of suburbs and garden cities, while the United States is admitted to surpass both in the development of parks.

American cities have been somewhat slower than those of the old world in recognizing the value of the city plan. While Washington was planned by L'Enfant, for a century that city was the laughing stock of the world as the "City of Magnificent Distances." It was not until 1900 that order was brought out of chaos by the appointment by the Senate Committee on the District of Columbia of a commission composed of Daniel H. Burnham, Frederick Law Olmsted, Jr., Charles F. McKim, and Augustus St. Gaudens, who, with L'Enfant's plan as the base, wrought out the new official plan for the future grouping of government buildings and the park treatment of Washington.

Cities in this country have been dominated by the gridiron plan of William Penn's designing rather than by the cowpath lanes of Boston. Somewhere between these two systems lies the ideal. The building of the "White City" unquestionably gave an impetus to the work of city planning, as the visitors were greatly impressed with its beauty and effectiveness. This impetus was accelerated by the active propaganda work of a growing list of local and national civic organizations, under the leadership of such bodies as the American Civic Association.

That the advanced civic workers of the old world and the new world are considering this whole problem of the city plan, and are approaching it from substantially the same point of view affords an indication of the progress of the past decade; so does the growing literature on the subject. Within the year there have been published two important books; one on *Town Planning*, by H. Inigo Triggs, the other on *Town Planning in Practice*, by Raymond Unwin, and on April 1, 1910, the first issue of the *Town Planning Review* made its appearance under the auspices of the University of Liverpool.

Some conception of the growth of the city-planning movement may be gathered from the following list of current efforts in this direction. This list is designed only to illustrate in concrete form the growth of this highly important movement:

In Chicago plans of the Merchants' Club were prepared by Daniel H. Burnham and his colleagues; in St. Louis an ordinance to create a city planning commission has been introduced into the city council. In this and sundry other ways the effective work of the St. Louis Civic League is beginning to bear substantial fruits; thanks to the intelligent agitation of the Indianapolis Board of Park Commissioners, and the public-spirited coöperation of the Commercial Club, some effective work is being done under the direction of George E. Kessler, of Kansas City; in Minneapolis a city improvement commission is busily at work, which has retained experts to prepare preliminary plans.

Detroit has retained E. H. Bennett, of Chicago, to prepare a plan. In Brooklyn the local architects are beginning to agitate the subject. Denver's plans for its civic center are progressing; obstacles are being overcome, and substantial work is being done in many directions to give force and effect to the suggestions of the experts who have been retained. In Portland, Ore., a civic improvement league has retained E. H. Bennett to prepare plans, a considerable fund having been raised to cover the necessary expense. In Atlanta, Ga., civic center and boulevard plans are being prepared and forwarded by the Chamber of Commerce. In Newark, N. J., a city-planning commission has been proposed.

In Los Angeles., Cal., a "Los Angeles—1915" movement is making steady progress. Plans for the improvement of the grounds and the surroundings of Harvard University are under consideration, with Frederick Law Olmsted as the professional adviser. In Milwaukee plans for a civic center are under discussion. In Colorado Springs one of the commissioners and the civic league are discussing the question of further plans for the beautification of this already beautiful city. In St. Joseph, Mo., plans have been prepared by Charles Mulford Robinson under the auspices of the Publicity Club. In Dallas, Tex., a city plan and improvement league has been organized as a result of the recent visit of the president of the American Civic Association.

The San Antonio City Improvement League is agitating the adoption of a city plan. In Memphis, Tenn., the City Club and the Civic Progress League are advocating city plans. In Wheaton, Ill., a movement to beautify the fronts of old buildings is being vigorously advocated. In Waterloo, Iowa, C. M. Robinson has submitted his plans for the beautification of the city. In Ottumwa, Iowa, plans for the improvement of the river front are under consideration. In Stillwater, Minn., W. A. Finklenburg, of Winona, has been retained to prepare plans. In Oshkosh, Wis., the Chamber of Commerce has a committee to consider the whole subject.

In Trenton, N. J., the Chamber of Commerce is having prepared plans for the improvement of the river front. In Montclair, N. J., although the plans of John Nolen prepared for the civic association have been defeated, it is generally regarded that the defeat is but a temporary setback. The Commercial Club of Muncie, Ind., has taken up the subject of city planning.

In Montreal a metropolitan park commission, broadly modeled on the Boston law, has been prepared for introduction at Ottawa by W. D. Lighthall; and in Toronto the Guild of Civic Architects has presented a very interesting suggestion for the improvement of the city.

Daniel H. Burnham, who first achieved national renown through his work in connection with the "White City" in 1893 and since for his various city plans, delivered one of the leading addresses at the London conference, in the course of which he said:

> Our city of the future will be without smoke, dust, or gases from manufacturing plants, and the air will, therefore, be pure. The streets will be as clean as our drawing rooms to-day. Smoke will be thoroughly consumed, and the gases liberated in manufacturing will be tanked and burned. Railways will be operated electrically, all building operations will be effectually shut in to prevent the escape of dust, and horses will disappear from the streets. Out of all these things will come not only commercial economy, but bodily health and spiritual joy. (See XXXI, *Landscape Architecture.*)

The Smoke Problem.—Chicago is making a strenuous effort along a number of lines to realize these ideals, and especially in the direction of overcoming the smoke nuisance. Those closely identified with the work believe that plant for plant, locomotive for locomotive, and ton for ton of coal, Chicago is making far less smoke than any other city using soft coal. Those in charge have been disappointed that more has not been accomplished during the three years the Department of Smoke Inspection has been at work; but the practical knowledge of the smoke problem differs materially from the academic knowledge with which it started. To keep the smoke down hour by hour, and day by day, in 16,000 boiler plants and in 1,600 locomotives is a pretty difficult job when a smoky soft coal is being used.

Aside from the engineering problems encountered, the policing job, the bringing of suits and their trials is considerable of a task. The policy has been one of coöperation and of leniency where justified; but it has been necessary to start a great many suits. Nov. 1st there were over 250 lawsuits pending in the courts for violation of the smoke ordinance. The smoke ordinance has stood the battering of the courts, and public opinion is such that no one cares seriously to fight the ordinance.

Cincinnati is another city which is making substantial progress in overcoming the smoke nuisance.

It is a shortsighted policy for a railroad or other corporation to display such anticivic spirit as not to work for the abatement of the smoke nuisance. It serves to increase the public irritation against the railroad, and prompts drastic legislation to force compliance with the public demand. Taking a broad view of the question, the railroads should endeavor to identify themselves with all plans looking toward civic improvement. It is "good business" for them to have their affairs conducted with the least objection from the public.

Smoke certainly is the foe of civic improvement, whether it comes from a locomotive or a factory chimney. It is a detriment to beauty and cleanliness, two of the prime factors of civic development, and a menace to the general health of a community. Reports of civic associations abound in striking testimony to this effect. The report by the Civic League of St. Louis points this conclusion: "The time has come when American cities must be made cleaner and more attractive. Smoke is one of the great dirt producers, and a constant obstruction to any effort to beautify a city."

In the opinion of the Cleveland Chamber of Commerce, the smoke nuisance is "the greatest hindrance to the highest development of civic beauty and refinement." In order to have the nuisance better understood, the Cleveland organization calculated the actual loss sustained by dry-goods merchants, department stores, furnishing stores, tailors, and other tradesmen.

There is now little doubt among careful observers as to the effect of smoke upon the health of a community. The opinions among medical authorities can be epitomized in the declaration in the *Dietetic and Hygienic Gazette* that in all American cities, particularly those west of Philadelphia, the evils of coal smoke constitute a menace to health and property. Where there is a pall of black, greasy, and poisonous atmosphere, which under certain meteorological conditions becomes a veritable blanket, the damage to property is appalling and the injury to health incalculable.

"A smoke-laden atmosphere," said Sir William Richmond, of London, "is bad for the nervous system, for the throat, eyes, and lungs." Alfred Russell Wallace, author of *Man's Place in the Universe*, is even more severe in his condemnation of the smoke nuisance. He says:

> The huge and ever-increasing cities, the vast manufacturing towns belching forth smoke and poisonous gases, with the crowded dwellings where millions are forced to live under the most terrible unsanitary conditions, are witnesses to a criminal apathy, an incredible recklessness and inhumanity.

Testimony can be multiplied indefinitely to emphasize the deleterious effect of smoke and noxious coal gases upon the human organism. That the influence of an excess of smoke is to produce nervous debility and to increase the cases of lung trouble is now a generally accepted fact. Consequently, the vital question is what is being done in a practical way to abate the smoke nuiance? Chicago and Cincinnati are not fighting alone, although they seem to have the hardest fights. In every other smoke-afflicted community, the crusade is being made for an undefiled atmosphere. Even in Pittsburg, which for many years had a pride in its reputation as the smokiest city in America, practical methods are being adopted to reduce the smoke to the minimum. A great change has been worked there. Other cities have their municipal ordinances to prevent smoke; but the greatest work is being done by means of an educational campaign. This is carried on through the municipal authorities, inclined to leniency toward the offenders when a disposition is shown to coöperate to avoid smoke, and by the American Civic Association. The smoke nuisance is being handled as an economic problem, and the railroad and the small one-chimney factory alike are being shown that smoke means waste.

As to results, the New York Central Railroad and the New York, New Haven & Hartford Road have adopted the method of electrification. The Pennsylvania Railroad is giving attention to the problem, regarding it entirely as an economic one, although impressed with its importance to public health and civic improvement. In Altoona, the Pennsylvania has installed a testing plant, consisting of a locomotive with driving wheels resting on a suitable supporting wheel, taking the place of the usual track. The locomotive is operated in the usual way, with a careful record of the work performed. By means of this plant, the company is educating its men in the fuel question. Recognizing the importance of greater supervision to reduce the waste in firing locomotives, the company has authorized additional supervisors whose duties are mainly of an educational kind. Definite instructions in advanced methods of firing have been placed in the possession of all men responsible for operating, firing, or attending locomotives of this road.

An important factor in the solution of the present difficulties connected with the smoke nuisance is the government's work. Investigations and experiments are continually going on, and, in the opinion of Prof. Robert H. Fernald, the expert directing the government's fuel inquiry, the smoke nuisance will be destroyed within a comparatively few years.

Billboard Advertising. — Missouri's Supreme Court has sustained the St. Louis billboard ordinance in an opinion that may properly be regarded as of the first importance in the effort to suppress this objectionable form of advertising. On the other hand a local Chicago judge has declared to be unconstitutional the act of 1909, prohibiting billboards fronting on boulevards. The decision was based on the theory that under the police power the state cannot interfere with property rights on "mere æsthetic grounds," grounds which have little, if any, relation to public health, order, or morals.

The modern view is that beauty is useful and health-giving, that private rights may be reasonably regulated in the interest of "æsthetics" of a certain kind. Last autumn the Federal Circuit Court in Colorado enjoined a commercial company from diverting a stream and destroying a verduous cañon and a lovely piece of scenery. The issue before the court resolved itself finally into this question: Was the stream "unappropriated" or was its actual use for "mere" beauty a beneficial use? The court said:

> Public health is a beneficial use. Rest and recreation is a beneficial use, and for that purpose water is used to make beautiful lawns, shady avenues, attractive homes, and public parks with lakelets and streams and artificial scenic beauty. Parks and playgrounds and grass are benefits and their uses beneficial, although no profit is derived from them. The world delights in scenic beauty, but must scenic beauty disappear because it has no appraised cash value? It is, therefore, held that the maintenance of the vegetation in Cascade Creek, by the flow and seepage and mist and spray of the stream and its falls as it passes through the cañon, is a beneficial use of such waters within the meaning of the constitution.

There is a general advance to be noted, however, in many communities in the fight against this civic nuisance. Public opinion has been aroused and carefully prepared ordinances exist, some forbidding billboards in certain places, others taxing them, still others restricting their erection. Boston has just put into force a regulation forbidding the use of temporary structures, erected in the streets, for advertising purposes. The licenses granted by the superintendent of streets for the erection of temporary structures of the kind are stamped with the following notice in red ink: "It is understood by the holder of this permit that he is not to allow the placing or painting of advertising signs, or the posting of bills on any fence or other structure which he may erect, inclosing any portion of the public streets granted him for building or other purposes, unless a special permit shall be obtained allowing the same."

In England.—Great Britain has a society for checking the abuses of public advertising, popularly known as "Scapa," the objects of which are: (1) protecting the picturesque simplicity of rural and river scenery, (2) promoting a regard for dignity and propriety of aspect in towns—with especial reference to the abuses of spectacular advertising, and (3) asserting generally the importance, as a great public interest, of maintaining the elements of interest and beauty in out-of-door life. It promotes the formation for defined districts of local societies, having for their aim to develop an intelligent interest in the neighborhood—its history, associations, natural features, and objects of architectural or archæological value, and to serve as local agencies for "Scapa" and the various societies with which it acts in concert, or others with cognate aims. The society receives the support and seeks to promote the objects of the following associations: The Commons and Footpaths Preservation Society; the Kyrle Society; the Metropolitan Public Gardens Association; the Selborne Society; the Society for the Protection of Ancient Buildings; the National Trust for Places of Historic Interest or Natural Beauty; the Smoke Abatement Society; the Cockburn Association, Edinburgh. It keeps itself in communication with kindred associations in the colonies, the United States, France, and Switzerland. In America, the American Civic Association performs a similar function with a large measure of success.

PUBLIC SERVICES

Police Service.—In police matters the complete exoneration by the Cleveland civil service commission of the golden rule chief of police, Fred Kohler, on every accusation made against him, is deserving of mention in view of the prominence which Chief Kohler has attained by reason of his efficient administration of his department, and the introduction of some radical ideas in regard to arrests. Following his reinstatement, Chief Kohler once more put in practice his golden rule, declaring to his force that by-gones were by-gones, and that he cherished no enmity against the detectives who testified against him, and that each man's job was secure so long as he served the public.

Another interesting event in police matters was Mayor Gaynor's letter to his new commissioner of police, James C. Cropsie, in which he outlined plans and policies that should be subserved in the management and control of a great metropolitan police force. It constitutes a substantial addition to police literature, and helps to clarify the situation not only in New York but elsewhere. Even though one may not agree with all of his conclusions, it is the sincere effort of an honest man to state clearly and effectively the principles which should be followed in administering the police force, and executing the great mass of sumptuary laws which have found their way onto the statute books of the city and State.

After reciting that the policy of his administration had been to impress the members of the force, and especially those in command, that the first thing for them to do was to be law-abiding themselves; that the force must treat citizens respectfully and properly, and there had been a gradual but substantial reduction of petty and needless arrests, and of the locking up of people in advance for such trifles, Mayor Gaynor declared:

> We have now arrived at a point where other forward steps must be taken with system and patience. In intrusting the police department to you let me say that although I can devote only a little time to it now and then I shall always be glad to confer with you about the policies and general management of the department; but for the enforcement of outward order and decency first, and next for the detection of secret illegal places, I shall hold you responsible. You are thoroughly familiar with the laws which confer the powers and prescribe the duties of police officers. While they jealously preserve the safeguards of individual right and liberty they also give ample powers to deal with criminals. For instance, unlawful places, like a gambling house or house of ill fame or a disorderly house, are by law public nuisances, and the police or any citizens, for that matter, have the right to take possession of them and hold such possession until the nuisance is thoroughly abated. This method has already been inaugurated.
>
> And finally let me say that all sensational noise and scandalizing of the city in the work of your department should be stopped. Let the work be systematic and constant, all complaints from citizens being especially attended to. There are clergymen and other good men and women, and societies of the same kind, who are constantly at work to prevent and minimize all kinds of vice of this city. We seldom hear of them through the newspapers. They are genuine and in earnest and seek no sensation or notoriety. Work with them. . . . As a last word let me repeat, "Let outward order and decency be enforced first of all, for that is the first duty of a police force."

The more important recent developments in American police administration have been:

> Medical inspection of street walking prostitutes in New York; separate court for domestic relations cases in New York; development of the golden rule policy in Cleveland; excellent work of state constabulary in Philadelphia riots; withdrawal of police from court details in New York and also from municipal department details; excise Commissioner Clement's clear and sane statement regarding a state constabulary in its last annual report; industrial education developed in reformatory institutions; further development of Judge Lindsey's juvenile court plans; development of the probation system in the Federal and state services.

Indiana has repealed its metropolitan police law under which the governor of the state appointed police commissioners in cities of 10,000 to 35,000; hereafter these officials will be appointed by the mayors.

Municipal Graft.—There has been no diminution of charges of graft within the past year. On the contrary, they seem to have increased, but unlike in former times they have been followed with indictments, proofs, and convictions. To illustrate, the finances of Middlesex County, Mass., in which the city of Cambridge is located, are having a much-needed overhauling. The investigation has developed some interesting facts: $243 was paid for a cow; $147.10 for a range; $23.73 for hanging pictures in the jail; $614.32 for a private bathroom for a woman prisoner; $2,073 for unspecified extras. One of the principal assessors of the city has been tried and convicted on various counts of larceny, his prosecution growing out of the complaints preferred and prosecuted by the Cambridge Tax Payers' Association.

Lawrence, Mass., enjoys the unpleasant notoriety of having its mayor sentenced to three years in the penitentiary on the charge of conspiracy to bribe certain city officials. Three other officials were convicted at the same time and given varying terms in prison, and a fifth was paroled.

Mayor Gaynor and his colleagues in the Board of Estimate and Apportionment inflexibly set themselves against graft, large and small. Many of Mayor Gaynor's most important reforms have been in the direction not so much of exposing graft as of eliminating the sources of it. In this way they have effected a saving of large sums to the city.

Pittsburg's graft prosecutions and those of Illinois have been so widely recounted as to need only passing reference. There is a striking difference, however, between the two cases: Pittsburg has been sending its grafters to jail, while Chicago and Illinois have been acquitting them and electing some of them to public office. Possibly the reason for this difference may be scented in the indictment of two men by the Cook County Grand Jury. One was that of a juror in the second trial of Lee O'Neill Brown on the charge of buying a vote for Lorimer for senator. The other was of the man who was alleged to have procured the corruption of the juror. Their stories alleged that they had been paid $270 and $135 each by one of the defendant's lawyers in return for the juror's vote.

San Francisco has so long been the center of graft charges, graft crusades, and graft prosecution that former Mayor Taylor was fully justified in asking a committee of public-spirited San Franciscans to investigate the situation. The committee which the mayor called together was securely above any suspicion of willful misstatement, hasty judgment, or the charge of being disgruntled or irresponsible agitators, their stake in the community being too large for these things. Its careful and thorough report has attracted widespread attention, not only locally, but generally, as its recommendations were of a searching character. Perhaps its most striking recommendation was to the effect that a law should be enacted making it a crime for any newspaper to publish as news

> any matters for which compensation is directly or indirectly paid, or agreed to be paid, unless the fact that such compensation has been paid or agreed to be paid is indicated by some plainly distinguishing mark next the news so printed. A person paying such compensation should be permitted to recover the consideration given by him, and immunity granted him, if he disclose the crime. A part of the punishment should consist in forbidding the publication of the paper for a period fixed by the judge.

The commission pointed out that the trial of Mr. Calhoun had disclosed that a considerable number of citizens who, when examined under oath as to their qualifications for jury service, complacently declared that they would not convict a man for bribery, however convincing the facts, if, since his crime, he had successfully broken a strike which was threatening his investments. It trenchantly pointed out that a system of public education which produces such men holding such views must be radically defective in both its ethical and political teaching.

Among other recommendations is one to the effect that nonpartisan municipal elections should be established, and there should be a separate tribunal for the judicial determination of the rates and charges of municipal utilities, for the cancellation of franchises procured by fraud, and that the law of evidence should be so changed as to compel corporations to give evidence against themselves.

Fire Protection.—The principle is well established that protection of property from fire is a proper function for the city government. There has been a steady improvement in methods and appliances. The growth of the fire-alarm telegraph has added greatly to the efficiency of the service, and the rapid introduction within the past two or three years of automobile apparatus has promoted economy, rapidity, and reliability, as well as efficiency.

Auto Fire Engines.—The *Municipal Journal and Engineer* is authority for the statement that "most of those connected with fire departments who have expressed an opinion on the subject have stated their belief that automobile apparatus is more efficient than horse-drawn, in that it is more sure to reach the fire without accident, and can make from two to four times as great speed. As to economy, there is not yet unanimity of opinion; nor do all agree as to the freedom from breakdowns of the automobile propelling apparatus. There is a saving in that not so many men are required with the auto apparatus, and the machines themselves do not take up quite so much room, and the space required for stabling the horses is saved altogether. Consequently, first cost of land and of houses, together with the salaries of men, should be included in any comparison made for determining relative economies."

Chief Allen, of the Trenton Fire Department, in a paper read before the Syracuse meeting of the International Association of Fire Engineers (Aug., 1910), in making a comparison as to the cost of horse and auto apparatus, gave the figures for two companies, one an auto company with a crew of seven men, the other an engine company with a crew of nine men, both companies located in the same district and doing the same work. The supplies and repairs for the auto company for a period of ten months amounted to $151.60, and the salaries of the seven men to $5,770, a total of $5,921.60. The supplies and repairs of the engine company during the same time amounted to $885.41, and the salaries of the nine men $8,129.80, a total of $9,015.21. This shows a saving of $3,093.61 in favor of the auto company.

"The difference in cost of maintenance is the employment of two less men on the auto company, and the cost of feeding, shoeing, and caring for four or five horses of the engine company. In fact, when the auto is idle there is no expense attached to it, while the engine company has a fixed charge of expense at all times. The saving of two men's salaries is a large item of expense, without impairing the efficiency of the company, and I might say we get better results from seven men on the auto than we do from nine on the engine company. Another good feature of the auto is the dispatch in reaching fires. Another is the efficient service rendered in the early stages of the fire. One is not delayed by low steam pressure, a poor fire, or an incompetent stoker, as frequently occurs with the engine; but as soon as the auto is connected, and the water is turned on, in less than one minute we have the full capacity of your engine; the stream is just as good the first minute as it will be at any time of the fire, and we find it a decided advantage to have a stream that will cover an area of from 200 to 225 feet right at the beginning of a stubborn blaze."

In Trenton, and, in fact, in most other cities, the auto engine is used as a "first aid." The auto engine is generally the first apparatus to reach the fire, and it immediately gets to work, if necessary, and endeavors to put it out. If it is found that other apparatus is required, the horse apparatus is sent for, and as soon as it is at work on the fire the auto engine is withdrawn and returns to a central point to attend to other fires which may break out while the horse apparatus is thus engaged. By this method the auto is not required to do much pumping, but is rather confined to the duty in which it excels, that of rendering service in any part of the city on short notice.

In England.—The figures and experience of the Trenton experiments are regarded as typical, both here and abroad. A writer in the London *Municipal Journal* (July 15, 1910) expresses the opinion that the use of the horse is passing in the British fire service. Ten years ago there was not a single motor fire apparatus of any description in use in Great Britain. To-day practically every town of importance throughout the kingdom either possesses at least one machine of the kind or is considering the adoption of the motor system. In some places horses have been dispensed with altogether. In London all the new stations are being built and equipped entirely for motor service.

According to the latest statistics available (1907) the properties owned by the American fire departments of the 156 cities covered had a total value of $70,284,861; $35,877,034, or a little more than one half of the total valuation, being the value of fire property in the fifteen largest cities of the country, and twenty-two per cent of the total value being found in the twenty-nine cities having a population of from 100,000 to 300,000.

Payments made in connection with the fire departments are divided by the census office into two classes: "outlays," which comprise accrued costs of lands and other properties more or less permanent in character; and "expenses," which include the cost of services, rents, and materials not permanent in character, and also depreciation of permanent properties. Under the first head, payments were made by the departments of the 156 cities, totaling $4,209,839, and the expenses totaled $37,783,113.

The fifteen largest cities paid for outlays $2,205,180, and for expenses $22,144,211; and the twenty-nine next largest cities spent for outlays $957,431, and for expenses $7,265,201. The per capita expenses averaged $1.69 in the fifteen largest cities; $1.60 in those of from 100,000 to 300,000 population; $1.48 in those from 50,000 to 100,000; $1.34 in those having from 30,000 to 50,000; the average of all the cities being $1.61. The highest per capita expenses were those for Utica, N. Y., $2.99, and the lowest forty cents, at Newport, Ky.

Fireproof Materials.—The Federal Government is the owner of buildings costing upward of $300,000,000 and is spending more than $20,000,000 annually in new buildings. In their construction the government endeavors to maintain a high standard of efficiency combined with an economical design. The work is of such magnitude and importance that the government cannot afford to take risks either in methods of construction or in materials to be used; therefore it has been found necessary to make a general investigation of materials used in construction work, and it has published the results under the title "The Fire Tax and Waste of Structural Materials in the United States." The report directs attention to the necessity of using cheaper fireproof materials, so that property owners may be encouraged to construct buildings that will better resist fire. They also show the necessity of better building codes in cities, and especially of a more effective enforcement of the codes already enacted, if the present enormous fire losses are to be diminished. The investigations indicate that fireproof buildings will be constructed at less expense in the future than in the past, and that the difference in cost between fireproof and inflammable buildings will soon cease to be an encouragement to the use of flimsy material.

The Fire Loss.—Some of the facts brought out by the investigators (Herbert M. Wilson and John L. Cochrane, of the Geological Survey) are most instructive. The 2,976 cities and villages from which reports were received, with a population aggregating 34,102,453, reported a fire loss of $86,476,029, a per capita loss of $2.54; the postmasters in rural districts reported a total loss of $89,995,798, a per capita loss for cities, villages, and rural districts from which returns were received of $2.51, an index sum that would give an aggregate loss for the United States in 1907 of $215,084,709, that is, $600,000 a day, or $25,000 an hour.

When it is known that the average per capita loss in the cities of the six leading nations of Europe amounts to thirty-three cents, the significance of these figures is realized. According to the census reports, the per capita cost of maintenance in Berlin is $0.26; London, $0.19; St. Petersburg, $0.22; Milan, $0.17; Stockholm,

$0.23, as compared with an average per capita appropriation (for 156 cities) in this country of $1.65. The low per capita cost of maintenance abroad is undoubtedly the result of stricter building regulations, more nearly fireproof buildings, and greater precautions to prevent the occurrence of fires.

The total loss on buildings in the United States was $109,156,894, and on contents $105,927,815. There were fires in 36,140 brick, iron, and stone buildings, with a loss of $31,092,687 on the buildings and $37,332,580 on the contents, and in 129,117 frame buildings, with a loss of $78,064,207 on the buildings and $68,595,235 on the contents. In cities and villages with a population of 1,000 or more there were 6,324 fires that extended beyond the building of origin, with a total loss of $13,913,694. The loss on fires that were confined to the building of origin in the cities and villages amounted to $93,179,589.

Loss of Life.—In addition to the great loss of property 1,449 persons lost their lives in fires during the year, and 5,654 were injured, an appalling record.

The inquiry covered not only the cost of fires in the United States, but also the general cost in Europe, and brought out some startling and not very flattering contrasts. In 1905 the bureau of manufactures sent letters of instruction to all the principal United States consular officers in Europe, requesting information concerning the fire losses in European cities. It is stated, however, that there is but little variation from year to year in the fire losses of the European cities, and for this reason the figures were tabulated.

European Cities.—Cities of Austria, Belgium, France, Germany, Norway, Russia, Switzerland, and Great Britain, with a reported population of 19,913,816, had a loss of but $9,582,340, a per capita loss of forty-eight cents. Russia had the highest loss, $3,100,823, in a population of 2,673,427, a per capita loss of $1.16. If the United States had Europe's per capita loss of forty-eight cents in a total population estimated by the census bureau for 1907 as 85,532,761, the total fire waste in this country for the year would amount to $41,055,725, a saving of $174,028,984. With the maximum per capita loss in Europe, $1.16 (in Russia), the fire waste in the United States would amount to $99,218,002, or $116,314,759 less than it did.

In the judgment of the investigators, the principal reason for the great difference between the amount of fire waste in the United States and Europe is that there are but few frame buildings in Europe, and practically none in the great cities.

The development of a more intelligent service on the part of cities and departments is becoming marked. Heretofore, the American departments have centered their attention upon getting to a fire quickly and putting into service particularly well-kept and effective apparatus and proceeding to flood a fire; lately they go at the matter with greater intelligence, put water where it is needed, close off draughts where that will do good, open draughts in other places, and fight a fire understandingly. In addition to this they are giving active and powerful support to the fire-prevention movement, advocating better building and more stringent codes.

So far as the cities themselves are concerned, the apathy on the subject of fire prevention as well as protection has been painfully marked. This last year there seems to have been an awakening. The secretary of the International Society of State and Municipal Building Commissioners and Inspectors (4200 Piney Road, Washington, D. C.) reports that he has been in correspondence with over a hundred cities that are either putting in a brand new code or materially revising old ones. This society is now engaged upon a study of the best codes so far evolved, and endeavoring to have the cities adopt a uniform building code, a model, uniform in its major requirements, and modified only in minor details to suit local conditions.

Statistics.—There are 29,055 men employed in the fire departments of the 156 cities reported on by the Federal census, of which 14,465 were in the fifteen largest cities. Of the total, 24,442 were regulars, 13,256 of these being in the fifteen largest cities; 2,535 call men, of which 1,481 were in the cities of from 50,000 to 100,000 population; 823 were substitutes, supernumeraries, etc., and 1,275 were miscellaneous employees. This does not include volunteer fire companies, of which there were 199, having 17,519 members, or about ninety members to each organization. The number of regular firemen per 10,000 inhabitants averaged 10.4 in all the cities, nearly the same average holding with each of the population groups.

BUREAUS OF MUNICIPAL RESEARCH

Many present-day municipal abuses have grown up and flourished, not because of criminal intent, but because of laxness and loose methods. To meet just this situation, to introduce intelligent order and supervision into the conduct of municipal affairs, to promote knowledge, system and efficiency in public business has been the aim of the bureaus of municipal research, the first of which was established in New York in 1906. Others have been established as follows: Philadelphia, 1908; Cincinnati, 1909; Memphis, 1909; Hoboken, 1910; Boston, 1910; Chicago, 1910; Milwaukee, 1910; St. Paul, 1910; Minneapolis, 1910.

In a bulletin issued by the New York bureau, the methods of municipal research are thus described:

> To ascertain how the powers and duties (and other materials of research) are distributed;
>
> To avail itself of the citizen's right to examine public records;
>
> To abstract and analyze such information as is contained in the records;
>
> To supplement examination of records by collateral inquiry where the records are defective as to work done and as to conditions to be remedied;
>
> To compare function with accomplishment and expenditure as to each responsible officer, each class of employee, each bureau or division;
>
> To confer with the official responsible for the municipal department or social conditions to be studied;
>
> To secure promises of coöperation, and instructions that direct subordinates to coöperate with the bureau's representatives;
>
> To verify reports by usual accounting and research methods, and by conferences with department and bureau heads;
>
> To supervise work in progress;
>
> To hold frequent conferences with supervisors and directors as to methods of investigation and as to the significance of the facts disclosed;
>
> To coöperate with municipal officials in devising remedies so far as these can be effected through change of system;
>
> To make no recommendations as to personnel further than to present facts throwing light on the efficiency or inefficiency of employee or officer;
>
> To submit in printed form suggestions not easily understood when orally given and not readily conveyed by typewritten statements;
>
> To prepare formal reports to department heads, city executive officers, and the general public;
>
> To support press publicity by illustrations, materials for special articles, suggestions to editors, to city officials, and to reporters;
>
> To follow up educational work until something definite is done to improve methods and to correct evils disclosed;
>
> To supply freely verifiable data to agencies organized for propaganda and for legislative, agitative, or "punitive" work;
>
> To try to secure from other departments of the same municipality and from other municipalities the recognition and adoption of principles and methods proved by experience to promote efficiency.

New York.—These methods have resulted in the saving of large sums of money to New York in the annual budget, as well as greater efficiency in every department of the city government, and above all, in the formulation and adoption of an intelligent municipal budget.

In 1909 the New York bureau gave a budget exhibit as a matter of public enterprise and instruction. It was so helpful and successful as to lead the city's Board of Estimate and Apportionment officially to secure $25,000 of the city's money with which to give a public budget exhibit in 1910; in May it adopted a resolution that the heads of the several departments, boards, and commissions be directed to submit in connection with their budgetary estimate for the year 1911 and in addition to the information prescribed by the comptroller, such charts, diagrams, plans or photographic representations as would serve the purpose of appropriate illustration of budget requests, as well as their relation to permanent city improvements, either in progress or projected.

In this way New York established a precedent in getting closer than any other city in America to a working ideal of municipal administration where unit cost can be determined and its reasonableness considered. With this information in hand, budget making need no longer be mere guessing, as is at present the case in a majority of cities. The officer asking an appropriation must show not only how much he spent in the past year, and what he spent it for, and what he accomplished by the expenditure; but he must show just what he intends to accomplish in the course of the next year, how he intends to accomplish it, why the proposed work is necessary and just what it will cost. All of this is important, but still more important is the fact that the exhibit put this information in such a graphic and practical form that the public could readily see and understand and reach a conclusion whether they were getting their money's worth, and if not, who was responsible for the failure. As *Municipal Facts* pointed out, never in New York's history has there been an administration like the present one; "never was there such a Board of Estimate. In one and the same breath it shows the taxpayers how their money is being spent and tells the department heads not to spend so much of it."

Boston.—Boston has an *official* Bureau of Municipal Research. The New York organization is an affair of private citizens who felt that the city's business was not always conducted in a business-like way; who gave their money, experience and time to the work they set themselves to do; and beyond mere researching they offered suggestions, help and coöperation to department heads who wanted it, or appeared on investigation to need it. The cost of all this, calculated in terms of money expenditure alone, has been $100,000 a year; but the results have been worth so many times that sum that the citizens of other places have been moved to imitate the example. (See XII, *Budget Making.*)

Boston's bureau is quite different. It is well known, according to the Boston *Common*, that the old finance commission had no use for the New York idea; it apparently believed that it had in itself all that was necessary for municipal research. Some time ago Mayor Fitzgerald put up a plan for a bureau of research and the finance commission killed it. But the commission evidently saw, after a while, that if it could make the bureau an adjunct to itself, so to speak, it would have a means of getting done some of its own work which was not being performed, or was being performed with difficulty. So, in the end, the city council was moved to appropriate $10,000, which the finance commission divided equally into two annual salaries, leaving nothing but the hope of further appropriations, or its own appropriation, from which to provide expert clerical help. That is one reason, doubtless, why a part of the Boston public is inclined to regard the appointment of the new research bureau as simply the addition of two paid members to the finance commission. Boston's real need, as sensed by the finance commission, is not so much of accounts, as of men who can direct accountants if it becomes necessary to employ them; not of men skilled in working out unit cost systems so much as of a man who can see through all the hypocrisies of "concealing systems," of men who, finally, can read department reports and make sane and logical comments on them.

Chicago.—The Chicago Bureau of Public Efficiency is an unofficial organization, supported by private citizens, to scrutinize the systems of accounting in the eight local governments of Chicago; to examine the methods of purchasing materials and supplies and letting and executing construction contracts in these bodies; to examine the pay rolls of these local governing bodies with a view of determining the efficiency of such expenditures; to make constructive suggestions for improvements in the directions indicated and to coöperate with public officials in the installation of these improved methods; to furnish the public with exact information regarding public revenues and expenditures, and thereby promote efficiency and economy in the public service.

For five months the Merriam Commission on City Expenditures has been conducting an investigation into the finances of the city government, and within a few more months will have covered this field in a general way. As this commission will go out of existence as soon as its final report is made, it was clear that much of the value of its work would be lost unless some means of effectively following up its recommendations is devised. In fact, the usefulness of any such work of investigation, as the Chicago City Club which fathered the movement pointed out, is directly in proportion to the persistence with which it is prosecuted. Efficiency and economy cannot be established in the public service as the result of any one effort, but only by continuous attention. Moreover, only a part of the local field has been covered. Similar work should be done for and by the other local governing bodies, including Cook County, the Sanitary District, the Board of Education, the Public Library Board and the Park Boards.

In order to make permanent the results secured by the Merriam investigation and to obtain other benefits in the way of increased efficiency in the expenditure of public funds, the permanent organization will maintain a staff of expert accountants, investigators and engineers, and carry on continuously an analytical and constructive study of public expenditures. The fact that such an organization is in existence will strengthen the hands of honest officials disposed to coöperate with any such movement, and restrain those whose interest in public expenditures is essentially personal and private.

As a result of the work which the National Municipal League has been doing for the past ten years in behalf of uniform accounts and reports, there has been developed a public sentiment in favor of uniform city budgets and balance sheets which is now receiving attention at the hands of a committee of the league. The movement has not only been accelerated, but in a considerable measure shaped and developed by the growth of the municipal research idea.

Municipal Reference Bureaus.—Coincident with the development of the idea of municipal research has been the growth of the demand for municipal reference bureaus. The St. Louis Civic League, in its last year book, described a condition that is common to practically all American cities:

> At present there is no central bureau of information at the City Hall. Each department acts independently, not only in giving out information, but also in collecting it, for its own use. There is no official charged with the particular duty of collecting, cataloguing and preserving municipal documents. Masses of valuable official material have been permitted to go to waste for lack of proper facilities for filing, cataloguing and preserving such material. There is no place in the City Hall where a member of the municipal assembly or the head of a department can go for information showing what other cities are doing along certain lines; as a result, he is often compelled to act upon measures without being able to satisfy his own mind that he is acting for the best interests of the city. The problems of a modern city are new and complicated, and they can be rightly solved only after a careful study and analysis of the facts and experiences of other cities. These deficiencies point to the need of providing for a department which will serve as a bureau of reference and information, charged with the duty of collecting and making available, not only the records, statistics, and reports of St. Louis, but also those of other American and foreign cities.

To a bureau of this kind, the Civic League declared, might well be assigned the following duties:

> (*a*) To have the custody of all documents, reports, records, etc., belonging to the city and not in actual use by the departments.
>
> (*b*) To collect laws, ordinances, reports and records from other cities.
>
> (*c*) To collect and make available, for the various departments, information relating to the practical operation of laws and ordinances in other cities.
>
> (*d*) To prepare or advise in the preparation of bills, ordinances and

resolutions—primarily as to their contents, not as to their legal form.

(*e*) To supervise the city printing and the issuance of all reports by the city.

(*f*) To serve as a Bureau of Municipal Information to citizens and answer all inquiries coming from other cities.

As the National Municipal League has from the beginning of its work in 1894 pointed out, the value of comparative data in dealing with municipal questions can hardly be overestimated, especially when so many new problems are constantly arising. A department of this kind would prevent many ill-advised measures from becoming laws and would often save the city an actual loss by preventing the passage of ordinances which have proved unsatisfactory in other cities.

This idea of a municipal reference library is by no means a new or an untried one. Departments or bureaus of this description have already been successfully established in Baltimore, Milwaukee, and Newark, N. J.; and departments of statistics have for some years existed in a number of cities, notably New York, Chicago and Boston. Los Angeles has a privately maintained bureau. A number of states have also established similar bureaus, among them Wisconsin, New York, Rhode Island, California, Indiana, Pennsylvania, Michigan; and bills have been introduced in other legislatures providing for their adoption. Foreign cities years ago recognized the necessity of such departments in some form.

Another step in the direction of a more effective coöperation is to be noted in connection with the formation of cabinets or round tables by mayors. An ordinance providing for monthly conferences between the mayor, the members of the city council, and the heads of city departments was passed in Boston on May 16 of this year. As the mayor has directed every department to send a representative, a full representation of the executive and legislative forces of the city is assured at these meetings. The advantages of having the department heads appear before the mayor and the city council and advise with them as to the progress of city affairs are many. In cases of controversy, arising from divided or uncertain jurisdiction, the mere bringing of the disputants face to face in the presence of neutrals often leads to a happy solution. The opportunity to meet and compare notes as to their work is one of which zealous public officials will be glad to take advantage. A spirit of coöperation is established, mutual favors and concessions are granted, and the dignity and efficiency of the entire service are sure to be enhanced. It is expected that the ordinance will tend to facilitate and simplify city business, and give greater and more intelligent publicity to the work of the various departments.

Mayor Brown, of Kansas City, has also established such a cabinet which is bearing fruit in a more harmonious and effective administration of the several departments of the city.

The National Municipal League was organized in 1894, and held its sixteenth annual meeting and the eighteenth national conference for good city government at Buffalo, Nov. 14th, 15th, 16th, and 17th.

William Dudley Foulke was elected president, to succeed Hon. Charles J. Bonaparte, who retired after seven years' service. The vice presidents elected at Buffalo were A. Lawrence Lowell, H. D. W. English, Charles Richardson, Thomas N. Strong, George McAneny, and Charles E. Merriam; treasurer, George Burnham, Jr.; secretary, Clinton Rogers Woodruff, Philadelphia, Pa.; chairman of the executive committee, Albert Bushnell Hart. There are 2,150 annual members of the league, besides 214 organizations with an enrolled membership of 185,524.

Among the subjects discussed at Buffalo were: City and state boards of health and the proposed federal department of public health; municipal franchises; municipal reference libraries; the library as a civic factor; nomination reform; the police problem; the commission form of government; sundry phases of the franchise question; school extension (that is, the larger utilization of school plants); city finances, budgets and statistics; corrupt practices; the grafter at work in American cities; the unearned increment in municipalities; the education of foreigners in American citizenship; the liquor question and the municipal problem; an effective civil service law for cities; the operation of woman's suffrage and its local effect; patriotism in municipal affairs, conservation in municipalities; the purpose and work of local civic associations.

STATISTICS OF CITIES OF 100,000 POPULATION OR OVER

	Population.		P. C. of Increase.	Indebtedness. 1910.	Expenditure. 1908.	Revenue. 1908.
	1900.	1910.				
Albany, N. Y.	94,151	100,253	6.5	4,661,232	3,381,801	3,761,330
*Allegheny, Pa.	129,896			....	....	....
Atlanta, Ga.	89,872	154,839	72.3	3,845,500[1]	3,237,475	3,200,781
Baltimore, Md.	508,957	558,485	9.7	36,847,457[1]	20,128,459	19,957,551
Birmingham, Ala.	38,415	132,685	245.4	4,480,000	1,408,916	1,389,756
Boston, Mass.	560,892	670,585	19.6	110,769,073	46,295,582	48,496,339
Bridgeport, Conn.	70,996	102,054	43.7	2,159,100	1,909,530	2,045,371
Buffalo, N. Y.	352,387	423,715	20.2	24,694,901	23,370,260	23,665,759
Cambridge, Mass.	91,886	104,839	14.1	7,763,250	....	....
Chicago, Ill.	1,698,575	2,185,283	28.7	24,447,674	91,865,922	95,254,193
Cincinnati, Ohio.	325,902	364,463	11.8	51,323,518	20,564,349	20,034,538
Cleveland, Ohio.	381,768	560,663	46.9	28,921,421	21,207,528	21,686,604
Columbus, Ohio.	125,560	181,584	44.6	14,511,900	10,160,461	10,304,858
Dayton, Ohio.	85,333	116,577	36.6	4,420,820	3,265,582	3,244,334
Denver, Colo.	133,859	213,381	59.4	378,000	9,821,561	9,543,930
Detroit, Mich.	285,704	465,766	63.0	8,749,000[1]	12,575,617	11,971,291
Fall River, Mass.	101,863	119,295	13.8	5,004,602	4,143,225	4,187,008
Grand Rapids, Mich.	87,565	112,571	28.6	528,000	4,149,210	4,503,705
Hartford, Conn.	79,850	98,915	23.9	4,903,481	4,858,592	4,854,371
Indianapolis, Ind.	169,164	233,650	38.1	3,008,500	5,869,400	6,080,260
Jersey City, N. J.	206,433	267,779	29.7	15,959,655[1]	10,739,003	11,118,612
Kansas City, Mo.	163,752	248,381	51.7	4,350,000[1]	8,136,275	8,097,842
Los Angeles, Cal.	102,479	319,198	211.5	708,000	18,204,515	20,724,132
Louisville, Ky.	204,731	223,928	9.4	11,352,200	8,406,783	9,556,661
Lowell, Mass.	94,969	106,294	11.9	2,628,665	4,069,357	3,945,800
Memphis, Tenn.	102,320	131,105	28.1	7,941,800	3,754,838	3,553,970
Milwaukee, Wis.	285,315	353,857	31.0	10,107,000	12,149,701	12,066,128
Minneapolis, Minn.	202,718	301,408	48.7	13,485,200	7,766,198	8,070,566
Nashville, Tenn.	80,865	110,364	36.5	5,352,000	1,828,792	2,124,973
Newark, N. J.	246,070	347,469	41.2	25,674,200[1]	31,825,571	33,173,989
New Haven, Conn.	108,027	133,605	23.7	3,954,300	4,119,439	4,127,992
New Orleans, La.	287,104	339,075	18.1	27,324,360	22,124,732	21,803,671
New York, N. Y.	3,437,202	4,766,883	38.7	1,014,626,365	417,141,402	434,838,841
Oakland.	66,960	150,174	124.3	1,619,963	3,747,020	3,446,911
Omaha, Neb.	102,555	124,096	21.0	5,920,000	4,829,116	5,249,135
Paterson, N. J.	105,171	125,600	19.4	4,571,004	4,721,657	4,549,548
Philadelphia, Pa.	1,293,697	1,549,008	19.7	95,483,820	63,683,975	70,878,266
*Pittsburg, Pa.	451,512	533,905	18.2	37,802,787	27,765,576	29,773,613
Portland, Ore.	90,426	207,214	129.2	9,737,119	6,247,444	7,005,754
Providence, R. I.	175,597	224,326	27.8	19,385,035	9,367,344	9,369,620
Richmond, Va.	85,050	127,628	50.1	10,239,425	5,637,904	5,583,396
Rochester, N. Y.	162,608	218,149	34.2	10,669,000	13,979,461	13,858,636
St. Joseph, Mo.	102,979	77,403	−24.8	1,303,600	1,757,136	2,517,860
St. Louis, Mo.	575,238	687,029	19.4	24,389,312	26,410,171	30,494,526
St. Paul, Minn.	163,065	214,744	31.7	11,455,800	6,372,288	6,419,293
San Francisco, Cal.	342,782	416,912	21.6	16,105,800	17,606,619	23,407,090
Scranton, Pa.	102,026	129,867	27.3	1,555,994	2,347,232	2,281,043
Seattle, Wash.	80,670	237,194	194.0	9,500,351	15,017,274	14,877,098
Spokane.	36,848	104,402	183.3	5,391,073	4,583,000	4,734,639
Syracuse, N. Y.	108,374	137,249	26.6	9,076,689	6,559,111	6,584,673
Toledo, Ohio.	131,822	168,497	27.8	8,162,469[1]	5,846,173	5,857,257
Washington, D. C.	278,718	331,069	18.8	9,494,800	16,226,071	16,278,644
Worcester, Mass.	118,421	145,986	23.3	9,944,625	6,080,595	6,023,853

[1] 1909.

* Allegheny and Pittsburg combined, 1910.

X. FOREIGN GOVERNMENTS AND DEPENDENCIES

For details regarding area, population, debt, revenues and expenditures, commerce, etc., for each country, see Part I, *International Statistics.*

THE BRITISH EMPIRE

GREAT BRITAIN

King and Emperor, GEORGE V, born June 3, 1865, son of King Edward VII, whom he succeeded May 6, 1910; married July 6, 1893 to Victoria Mary, daughter of the Duke of Teck. Heir-apparent, Edward Albert, Prince of Wales, born June 23, 1894. The coronation of King George has been fixed for June 23, 1911. The last session of Parliament modified the coronation oath, which has stood since the days of the reformation and contained language highly offensive to Roman Catholics. All this language is stricken out, and in place of it are substituted merely the words, "I am a faithful Protestant."

The British Empire consists of the United Kingdom of Great Britain and Ireland (in which are included Scotland and Wales), the Empire of India, and the royal dominions beyond the seas, including the self-governing Dominions of Australia, Canada, and South Africa, the Crown colonies, protectorates, and other possessions, embracing a total area estimated at 12,000,000 square miles, and a population estimated at 425,000,000, the largest population ever governed by one central government, comprising more than one fifth of the world's inhabitants.

The executive government of Great Britain is vested nominally in the king, and exercised by a parliamentary committee of ministers, called the Cabinet, whose tenure is dependent upon a majority of the House of Commons. The First Lord of the Treasury is generally the Prime Minister, and his colleagues are appointed on his nomination. The Cabinet consists of nineteen members, besides a number of other heads of departments. The Prime Minister, Rt. Hon. H. H. Asquith, born in 1852, was appointed April, 1908; Chancellor of the Exchequer, Rt. Hon. D. Lloyd-George, born in 1863.

The supreme legislative power of the British Empire resides in Parliament, which is summoned by the writ of the sovereign, by advice of the Privy Council, at least thirty-five days prior to assembling. The custom now is for Parliament to meet annually, the session generally extending from the middle of Feb. to the middle of Aug. Dissolution may occur by the act of the sovereign, or by proclamation during recess, or by lapse of time, the statutory existence of a Parliament being limited to seven years.

Parliament consists of the Lords and the Commons. The House of Lords consists of peers who are such by hereditary right, or by creation of the sovereign, or by virtue of office—i. e., the English bishops, or by election for life—i. e., the Irish peers; or by election for the duration of Parliament—i. e., the Scottish peers. The number of peers in 1910 was 26 Lords Spiritual, and 593 Lords Temporal.

The constitutional right of the Lords to reject or amend the financial and other legislation originating in the Commons, has been the subject of political controversy, whenever the Liberal Party has been in control of the government. This controversy became acute in 1909, when the Lords rejected the budget of Lloyd-George, Chancellor of the Exchequer, and the dissolution of Parliament followed.

The subsequent election continued the Liberal control in the Commons, but by a greatly reduced majority, and the whole question is now foremost in English politics, having been held in abeyance during the earlier part of the year 1910 by the death of King Edward. (For an account of the failure of the non-partisan conference, the dissolution of Parliament, and the election of a new Parliament in December, see III, *History.*)

The House of Commons consists of 670 members under the redistribution act, representing counties, boroughs, and universities, of which England and Wales have 495; Scotland, 72; and Ireland, 103. Dec. 20th the result of the last election was declared. The parties now stand: Unionists, 272; Liberals, 272; Laborites, 42; Nationalists, 74; Independent Nationalists, 10; net coalition gain, 1; coalition majority, 126. Total votes cast, 5,229,071, as follows:

Unionists	2,415,280
Liberals	2,293,894
Laborites	382,158
Redmondites	95,426
O'Brienites	39,470
Miscellaneous	2,843

The composition of the last Parliament was: Liberals, 275; Unionists, 273; Laborites, 40; Nationalists, 71; Independent Nationalists, 11.

Local government is conducted through a lord lieutenant in each county, who is president of the County Council, elected by the people; about one sixth of the population are electors, both in the election of members of Parliament and county and local officers, dependent upon certain property qualifications in counties and such boroughs as have county privileges.

The established church of England is Protestant Episcopal; but civil or other disabilities do not attach to any class of British subjects on account of religious belief. The population is very nearly evenly divided between the established church and the nonconformists.

Primary education in England and Wales is under the direction of the Board of Education, and is locally controlled by the County Councils. It is free, and its cost defrayed by local taxes, augmented by government grants. Higher education is given at the ancient universities of Oxford and Cambridge, but there are many fine universities, technical and scientific, in the various cities, supported largely by local funds and bequests.

Great Britain derives her revenues almost wholly from direct taxes, chiefly the income tax, beer and spirit duties, licenses and probate, and excise duties. It is the only important European country deriving no considerable share of its revenue from customs, ninety-one per cent of its imports being free of all duty.

Great Britain leads the European nations in the extent and variety of her manufactures and commerce. Agriculture is comparatively insignificant, but 18,808,000 acres out of 77,680,000 land and water surface being in arable land, and 28,865,000 acres in permanent pasturage. Nine tenths of her foods are imported, as well as the great bulk of the raw materials of manufacture. (See XX, *Manufactures.*)

Ireland.—The head of the administrative executive is the lord lieutenant, at present the Earl of Aberdeen, assisted by a chief secretary, the Lord Chancellor of Ireland, the Attorney General in Ireland, and a Privy Council; but the government is practically carried on under the direction of the British ministry. There is a separate Local Government Board, a Board of Public Works, a Board of National Education, a Department of Agriculture, and other minor departments directly responsible to the Irish government. Area 32,559 sq. m. The population of Ireland has steadily declined since 1841, when it was 8,175,124, as contrasted with 4,458,775 in 1901. In religion, 3,308,661 were returned as Roman Catholics, 581,089 as British Episcopalians, and the remainder as of other sects, the Roman Catholics being 74.2 per cent of the population.

Under the Irish Land acts and the Land Purchase acts, beginning with that of 1881, the great body of agricultural tenants in Ireland has fair rents judicially determined, the rate being fixed by the Land Commission for terms of fifteen years. Under the Irish Land act of 1903 state advances are made to tenants to purchase their holdings under the supervision of the commissioners.

Ireland has in operation 32,000 cotton spindles, and the linen manufacture is highly developed in Belfast and neighborhood. The great body of the population is engaged in agricultural pursuits. Revenue (1909), $44,957,430; expenditure, $42,124,050.

Scotland.—By act of Parliament a Local Government Board for Scotland was constituted in 1894, consisting of the Secretary for Scotland (Lord Pentland) as president, the Solicitor General of Scotland, the Undersecretary for Scotland, and three other members named by the king. Parish councils were established in each parish to take the place of the parochial boards, and these exercise powers similar to the parish councils in England. Municipal council boards exist in the cities and towns with bailies and provosts similar to those of England, instead of aldermen and mayors. Area 29,796 sq. m.; pop. 4,472,103. Revenue (1909), $77,942,250; expenditure, $32,338,440.

Wales has an area of 7,446 sq. m. and a population of 1,455,930.

Isle of Man and the Channel Islands.—The Isle of Man is administered in accordance with its own laws by the Court of Tynwald, consisting of a governor appointed by the king, a Council for Public Affairs, also appointed by the king, and the House of Keys, a representative assembly of twenty-four members chosen on a property qualification for seven years. The island is not bound by acts of the Imperial Parliament unless especially mentioned therein. The lieutenant governor is Lord Raglan. The people are chiefly engaged in agriculture.

The Channel Islands, of which Jersey, Guernsey, Alderney, and Sark are the most important, are administered according to their own laws and customs, under a lieutenant governor and bailiff appointed by the king. The principal islands have their local councils elected by the people. The islands are not bound by acts of Parliament unless especially named in them. Their inhabitants are chiefly engaged in fishing and agriculture.

BRITISH COLONIES IN EUROPE.

	Acquired.	Area.	Population.	Revenue.	Expenditure.
Gibraltar	1704	2	18,316	$401,071	$386,486
Malta	1800	117	212,888	2,223,547	2,162,768

COLONIES IN ASIA.

	Acquired.	Area, Sq. Miles.	Population.	Imports.	Exports.	Year.
British India	1600–	1,097,821	231,855,533	$491,943,050	$517,617,690	......
Feudatory States	....	675,267	62,461,549	....	....	......
Cyprus	1878	3,584	258,997	2,757,777	2,862,063	1908
Aden, Perim, Socotra	1839	10,387	55,974	16,420,929	20,663,796	1909
Ceylon	1801	25,332	4,038,456	3,547,832	38,332,792	1908
Straits Settlements	1785–1824	1,600	628,016	179,396,694	155,254,644	1908
Fed. Malay States	....	26,380	965,850	27,313,102	36,709,038	1908
Other Malay States	....	12,500	615,000	777,523	646,210	1907
Labuan	1846	30	8,245	....	....	......
Borneo and Sarawak	1877	73,206	660,000	4,100,187	6,424,239	......
Hong Kong and Ter.	1841	390	421,499	20,000,000*	10,000,000	1908
Wei-hai-wei	1898	285	130,792	47,219†	95,673‡	1908

* Estimated. † Revenue. ‡ Expenditure.

INDIA

A dependency of Great Britain, acquired after the Sepoy rebellion (1857–58) from the East India Company, and direct sovereignty vested in the Crown by act of Parliament. The dependency is partly under direct administration of English officials and partly of native states, all subordinate in varying degrees of relationship to the sovereign power. The nine great provinces are Madras, Bombay, Bengal, the United Provinces of Agra and Oudh, the Punjab, Burmah, Eastern Bengal and Assam, the Central Province and the Northwestern Frontier Province. Sir Charles Hardinge, at that time permanent under secretary at the British Foreign Office, was appointed Viceroy of India in July, 1910, taking the title of Lord Penshurst. He was born June 20, 1858, and educated at Trinity College, Cambridge, taking his degree in 1880. He has had long experience in the diplomatic service.

The British Parliament is supreme over India, but all statutes relating to India are in the nature of constitutional enactments or financial provisions. The Secretary of State for India presides over a council of fourteen members, appointed for seven years from among Indian ex-officers. In 1907 two Indian members were appointed. The council controls the expenditure of Indian revenues, both in India and elsewhere. In India itself the supreme authority is vested in the governor general, or viceroy, and a council of six members, appointed by the Crown for a period of five years. In 1909 an Indian was appointed a member of the council for the first time. The work of the council is divided among seven departments. The several provinces are each under a lieutenant governor appointed by the viceroy with the approval of the Crown and each has a legislative council. For local government purposes there are 750 municipal bodies, as a rule elected by a limited suffrage. A far-reaching scheme of administrative reform was projected in 1908 and enacted into law in 1909, during the viceroyship of Lord Minto. The scheme provides for the appointment of an Indian member to each of the executive councils both of the viceroy and of the provinces. The new Indian Councils Act has not altogether satisfied the growing unrest of the native population of India. (See III, *History.*)

The large majority of the population of the Indian provinces, comprising, by the 1901 census, 294,317,000 people, is engaged in agricultural pursuits. There is an agricultural department in every large province to improve agricultural methods and disseminate agricultural information. Great irrigation works have been carried out, the area benefited being 40,000,000 acres. The principal crops are rice, wheat, millet, tea, cotton, sugar cane, tobacco, and indigo.

The majority of the natives profess either the Hindu, Buddhist, or Mohammedan religions. Only a small portion read or write, but there are primary and normal schools in every province, with governmental inspection. There are also five universities with affiliated colleges. Estimated revenue (1910), $358,429,534; expenditure, $357,307,200.

In March, 1910, there were 31,614 miles of railroad open in India, and 2,898 miles under construction or authorized. The financial result to the state during the year 1909 of the working of the state railways, after meeting, in addition to the expenses of working, all charges for interest on capital outlay, was a net gain of £114,000; 329,380,000 passengers were carried during the year. The total debt of India, outstanding on March 31, 1909, was £256,684,069. Of this amount £182,213,141 is for railways and £30,738,991 for irrigation works, the balance, £43,731,437, being described as "ordinary."

DOMINION OF CANADA

In 1867 the British North America Act was passed by the English Parliament, uniting the provinces of Quebec, Ontario, Nova Scotia, and New Brunswick into a federated dependency, with provision for the admission of other provinces.

Each province is governed by a lieutenant governor, appointed by the Crown, with a premier and cabinet, a legislative body of two chambers, elected by the people, the ministry being subject to a legislative majority. The administration of civil and criminal laws, education, and taxation are under provincial control.

The Dominion Government.—Capital at Ottawa; governor general, Rt. Hon. Earl Grey, whose term, expiring 1909, has been extended for two years; prime minister, Rt. Hon. Sir Wilfrid Laurier, with a ministry of thirteen members, representing the Liberal Party, which controls the Parliament elected in 1906. (See I, *Statistics;* and III, *History.*)

X. FOREIGN GOVERNMENTS AND DEPENDENCIES

PROVINCES OF THE DOMINION OF CANADA

	Date of Admission.	Area in Sq. M.	Pop., 1901.	Pop., 1909, Estimated.	Capital.	Revenue, 1908.	Expenditure, 1908.
Nova Scotia	1867	21,428	893,953	1,037,112	Halifax	$1,783,469	$1,634,758
New Brunswick	1867	27,985			Fredericton	1,086,739	1,042,197
Prince Edward Island	1872	2,184			Charlottetown	411,831	378,968
Ontario	1873	260,862	2,182,947	2,619,025	Toronto	8,607,759	8,557,065
Quebec	1867	351,873	1,648,898	2,088,461	Quebec	5,370,479	4,974,637
Manitoba	1867	73,732	255,211	466,268	Winnipeg	2,827,999	2,440,847
Saskatchewan	1870	250,650	91,279	341,521	Regina	2,420,401	2,419,235
Alberta	1905	253,540	73,022	273,859	Edmonton	2,893,498	2,823,830
British Columbia	1871	357,600	178,657	289,516	Victoria	3,143,277	3,026,312
Northern Territories	1905	1,922,735	47,348	58,309	....	....	....
Yukon, etc	1908	207,076			....	....	....
		3,729,665	5,371,315	7,184,744			

NEWFOUNDLAND

Newfoundland, population (1901), 224,931, is the only British dependency in North America not now included in the Dominion. The peninsula of Labrador is a dependency of Newfoundland. Revenue, $2,986,450. Expenditure, $2,943,308 (1909).

NORTH AND SOUTH ATLANTIC COLONIES

	Acquired.	Area in Sq. M.	Population. 1901	Revenue.	Expenditure.
British Guiana	1803–1814	104,000	294,000	$2,624,657	$2,620,492
British Honduras	1798	7,562	42,406	364,840	541,792
Jamaica	1655	4,193	771,900	198,263	166,372
Trinidad and Tobago	1797	1,754	279,700	....	....
Barbados	1695	166	195,600	....	....
Bahamas	1629	5,794	54,358	....	....
Bermuda	1612	17	17,536	328,234	287,575
Other Islands	1612	8,742	255,000	....	....

BRITISH AFRICA

The following are the British colonies, dependencies, and protectorates outside the Union of South Africa; their areas, population, capitals, and date of acquisition. These various dependencies are governed, except as otherwise indicated, by resident commissioners appointed by the Crown.

	Year of Acquisition.	Area in Square Miles.	Population.	Capital.	Revenue.	Expenditure.	Year.
Ascension	1815	34	120	Georgetown	....	....	......
St. Helena	1673	47	3,558	Jamestown	$36,110	$39,785	1908
West Africa:							
N. Nigeria	1900	256,400	7,614,751	Zungeru	2,614,028	2,627,320	1909
S. Nigeria and Prot	......	77,260	6,500,000	Lagos	6,745,558	6,598,728	1908
Gold Coast and Prot	1872	119,260	1,697,000	Kumassi	3,655,410	3,243,039	1908
Sierra Leone and Prot	1787	30,000	1,252,000	Freetown	1,560,060	1,661,493	1908
Gambia and Prot	......	3,619	154,330	Bathurst	281,384	296,931	1908
Mauritus and Dep	1810	835	380,144	Port Louis	2,859,138	3,117,349	1909
Seychelles	......	156	21,982	Victoria	153,522	150,903	1908
Somaliland	1884	68,000	348,086	Berbera	147,384	653,835	1909
British East Africa:							
East Africa Prot	1905	175,518	4,000,000	Mombasa	2,583,950	3,489,591	1910 estd.
Uganda Prot	1890	223,500	2,764,086	Mengo			
Zanzibar	1891	1,020	250,000	Zanzibar			
Nyasaland	1891	43,608	997,217	Blantyre	391,390	500,735	1909
Rhodesia	1889	439,575	1,604,875	Salisbury	8,837,287	2,706,450	......
Swaziland	1900	6,536	85,491	Mbabane	192,110	279,780	1908
Basutoland	1884	10,293	348,848	Maseru	527,975	616,836	1909
Bechuanaland	1885	275,000	134,100	Mafeking	204,363	368,392	1909

THE UNION OF SOUTH AFRICA

The colonies of the Cape Colony, Natal, the Transvaal, and the Orange River Colony were united in a legislative union, under a constitution enacted by the British Parliament, promulgated by royal proclamation Sept. 20, 1909, and effective May 31, 1910. Provision is made by which other British colonies may join the Union later. The new Commonwealth is governed by a governor-general, appointed by the king, an executive council, appointed by the governor general, and a Parliament of two houses, the membership of which is limited to persons of European descent. English and Dutch are the official languages and are treated as on an equal footing. Bills enacted by the Parliament require the assent of the royal governor, and may be disallowed by the king within one year. Each colony has at its head an administrator, appointed by the governor general, an executive committee, and a provincial council of twenty-five members, or a number equal to the number of members which the province sends to the Union Parliament. Acts of the provincial councils are subject to veto by the governor general, who is Viscount Gladstone, appointed 1910.

The area, population, capital, revenue, and expenditure of the four states constituting the Union of South Africa, are as follows:

	Acquired.	Area in sq. m.	Population.	Capital.	Revenue.	Expenditure.
Union of South Africa...						
Cape Colony	1814	276,995	2,507,500	Cape Town . . .	$35,520,481	$37,309,228
Natal	1843	35,371	1,206,386	Pietermaritzburg	17,060,301	16,932,194
Transvaal	1900	110,426	1,269,951	Pretoria	27,874,646	21,980,698
Orange Free State . .	1900	50,392	466,380	Bloemfontein. .	4,448,289	4,629,213

The industrial development of South Africa will be mainly along agricultural lines. Maize, with its secondary products of bacon, beef, lard, and hides, is the great staple. Sheep farming is capable of great extension. Ostrich farming is already a prosperous industry. Tobacco, fruit, and wine are also promising industries. The agricultural development depends upon the upbuilding of an export trade and the development of railways. But mining is still the main source of South African prosperity; gold and coal, and in the Pretoria district, diamond mining, the output in 1907 being 1,069,391 carats, valued at $7,815,000. (See III, *History*.)

COMMONWEALTH OF AUSTRALIA

In 1900 the British Parliament enacted the law erecting the six colonies of Australia into a federated commonwealth. The area, population, capital city, revenue, and expenditures of the several states are as follows:

State.	Area in sq. miles.	Estimated population, Dec., 1908.	Capital.	Revenue.	Expenditure.	Year.
Victoria...........	87,884	1,271,174	Melbourne.....	$39,829,658	$39,116,404	1909
New S. Wales......	310,372	1,591,672	Sydney.......	66,217,745	64,709,470	1909
Queensland........	670,500	552,345	Brisbane......	23,163,800	23,115,637	1909
South Australia....	903,690	407,179	Adelaide......	17,258,778	15,840,766	1909
West Australia.....	975,920	267,110	Perth.........	18,547,077	18,987,237	1909
Tasmania.........	26,215	185,824	Hobart.......	4,541,208	4,666,751	1909
Papua............	90,540	350,000	....	126,452	235,831	1909

NOTE.—The estimated population does not include *aborigines*.

Each state is governed by a lieutenant governor, appointed by the Crown, a legislative council, and a legislative assembly. The members of the council are appointed generally for life; the members of the assembly are elected by adult suffrage; women have the suffrage in most of the states. The states control education, local taxation, and the administration of the courts.

The Commonwealth government resides in the governor general, appointed by the Crown, the ministry, responsible to the Parliament, and the Senate and House of Representatives. Six senators for each of the six states are elected for terms of six years. The House of Representatives contains twice as many members, the number elected in the several states being in proportion to the respective population of each. The House is elected for three years, subject to earlier dissolution by the governor general. Universal adult suffrage prevails in the election of both senators and representatives. Governor general, the Earl of Dudley; prime minister and treasurer, Hon. Andrew Fisher, with eight cabinet officers. Since the organization of the Commonwealth, Jan. 1, 1901, there have been eight ministries, including the present. Mr. Fisher was previously prime minister from Nov. 13, 1908, to June 2, 1909. His predecessor, Hon. Alfred Deakin, was prime minister in 1903–04, 1905–08, and 1909–10. (See III, *History.*)

PACIFIC ISLANDS

The Dominion of New Zealand consists of a group of islands southeast of Australia. Area, 104,471 square miles; population, 929,484; Maoris, 47,731. Capital, Wellington. Administered by a governor and responsible ministry. There are two Houses of Parliament. Woman's suffrage exists. All important public works are in the hands of the government, and are carried out on the coöperative system. The chief exports are wool, frozen meat, sheep skins and pelts, tallow, butter, gold, gum, hemp, and grain. Revenue, $44,271,397. Expenditures, $43,202,313 (1909).

OTHER ISLANDS

	Area, sq.m.	Population.	Revenue.	Expenditure. '09
Fiji........	7,740	130,981	$865,152	$960,298
Tonga, Solomon and Gilbert Is.	12,556	211,417	251,952	295,172

CONTINENTAL EUROPE

AUSTRIA-HUNGARY

(*Oesterreichisch-Ungarische Monarchie*)

Emperor of Austria and King of Hungary, Franz Josef I, born Aug. 18, 1830. Proclaimed Emperor of Austria after the abdication of his uncle, Ferdinand I, and the renunciation of the crown by his father, Dec. 2, 1848. Crowned King of Hungary June 8, 1867. Heir presumptive, Archduke Franz Ferdinand, son of the late Archduke Karl Ludwig. Privy Councillor, Graf von Aehranthal.

The Austro-Hungarian monarchy consists of the Austrian Empire and the Hungarian Kingdom, the relation between the two states being regulated by the so-called compromise of 1867, under which the two states are independent of each other, possessing each its own constitution, its legislature, and executive departments. Inherent in the Empire are foreign, military, and naval affairs, and the imperial finance.

Legislative power relating to common affairs (including the voting of money for imperial purposes) is exercised by the Parliaments of both countries; but the duty of examining the requirements of the common services and advising thereon, resides in the so-called delegations, of which there are two, each of sixty members, twenty chosen from the Upper Houses of Austria and Hungary, and forty from the Lower Houses of each. They are appointed for one year, meet alternately at Vienna and Budapest, and deliberate independently, their decisions being communicated reciprocally in writing. If after three interchanges, the delegations do not agree, all the delegates meet together and without debate settle the matter by vote.

Austria.—The Austrian Parliament consists of two Houses, the Upper House formed of the princes of the imperial family, fifteen in number, a number of nobles (seventy-four at present) possessing large landed property, in whose families the dignity is inherited, archbishops and bishops, and other life members nominated by the emperor, whose number may not exceed 170. The Lower House is elected by universal and direct suffrage—term of service six years. There are provincial diets for the seventeen separate provinces of Austria. Primary education is free and compulsory, maintained by local taxation. Secondary schools are controlled by the central government. The principal industries are mining, manufactures, and agriculture.

Hungary.—The Hungarian Parliament has two Houses; the Upper House consists of Hungarian princes, counts, and barons, dignitaries of the Roman Catholic and Greek churches; life peers appointed by the Crown, and life peers elected by the Upper House. At the session of 1909 there were fifteen archdukes, 249 hereditary peers, and sixty-seven life peers. The right to vote for members of the Lower House is based upon a complicated system of property, tax paying, or educational qualification, so adjusted as to maintain Magyar supremacy, there being but twenty-six non-Magyars out of 413 members in 1909. The questions of suffrage reform, an independent Hungarian bank, and the relations with Austria, have made the sessions of the Hungarian Parliament scenes of almost constant turmoil in recent years. The ministry of Count Hédervâry, appointed Jan. 18, 1910, and which obtained a majority in the Lower House at the subsequent elections, is committed to suffrage reform and a more conciliatory policy with reference to the Empire. It is not anticipated that any new suffrage measure will "compromise the Magyar character of the Hungarian state." Primary education is free and compulsory, maintained by local taxation. Secondary schools are state aided. Agriculture, including forestry, is the chief industry. There is considerable mining and manufacture.

Bosnia and Herzegovina were by the Treaty of Berlin, July 13, 1878, handed over to Austria-Hungary. New regulations or fundamental statutes for the government of the annexed territory were promulgated Feb. 22, 1910. They establish a diet for Bosnia-Herzegovina, and contain guarantees of private rights. Seats in the diet are distributed primarily according to religions; there is universal suffrage, but elections are based on a class system of (1) landed proprietors and higher tax payers, (2) urban electors, and (3) rural voters.

BELGIUM

(*Royaume de Belgique*)

King Albert, born April 8, 1875, who succeeded his uncle, Leopold II, who died Dec. 17, 1909. Heir apparent, Prince Leopold, born Nov. 3, 1901. Prime Minister, M. Schollart. By the constitution of 1831 Belgium is a constitutional, representative, and hereditary monarchy. The legislative power is vested in the king, Senate, and Chamber of Representatives. Senators, 110 in number, are elected for eight years—one half are elected directly by the population of each province, the other half by the provincial councils. In the election of members both of the Senate and Chamber of Representatives, the principle of proportional representation of parties was adopted by law of Dec. 29, 1899. Members of the chamber, 166 in number, term four years, are elected by popular franchise. Every citizen over twenty-five years of age, resident for one year in the same commune, and not legally disqualified, has a vote. Not more than two supplemental votes may also be cast, based upon property, age, family, and educational qualifications. Abstention from voting is punishable.

French and Flemish are the joint official languages of Belgium. Nearly the entire population is nominally Roman Catholic. Primary education is free and compulsory, the schools being maintained by communal taxation, with provincial and state grants. Many ecclesiastical schools under Roman Catholic control are maintained. Belgium is essentially a manufacturing country, the leading industries being collieries, quarries, glass, textiles, lace, distilleries, breweries, etc.

The outlying possessions of Belgium consist of the territories on the Congo in Africa on the right bank of the river from Manyanga with sixteen miles of sea coast, and the left bank from Noki and from that point both banks. The Congo Free State was founded in 1882, by Leopold II, and its perpetual neutrality is guaranteed by Germany. Annexation to Belgium was provided for by treaty, 1908. The king is represented in the colony by a governor general. Chief products are ivory, rubber, palm nuts, palm oil, coffee, cocoa. Plantations of rubber and coffee have been established by the government. In response to world-wide complaints of misgovernment a scheme for the administration of the Congo was submitted in 1909. (See IV, *International Relations.*)

BULGARIA

King, Ferdinand, born Feb. 26, 1861; elected Prince of Bulgaria by vote of the National Assembly, July 7, 1887; assumed the government Aug. 14, 1887; election confirmed by the Porte and the Great Powers in March, 1896. Heir apparent, Boris, born Jan. 30, 1894.

The principality of Bulgaria was created by the Treaty of Berlin, July 13, 1878. Sept. 18, 1885, the Government of Eastern Rumelia was overthrown by a revolution, and a union with Bulgaria proclaimed. This union was confirmed April 6, 1886, by a conference of the representatives of the signatory powers of the Berlin Treaty. The constitution as amended May, 1893, vests legislative authority in a single chamber, whose members are elected by universal manhood suffrage. Executive power is vested in eight ministers, nominated by the king.

The national religion is the orthodox Greek Church. Education is free and nominally obligatory, one half of the cost being provided by the Kingdom, and the remainder by local taxation. The chief sources of revenue are direct and indirect taxes. The population is chiefly engaged in agriculture, the principal products of which are wheat, wine, and silk.

On Sept. 18, 1910, the king issued a ukase, reconstructing the ministry, with M. Malinoff as prime minister and minister for foreign affairs. In connection with recent charges of corruption in the ministry of the interior, several important officials were arrested. (See IV, *The Balkan Situation.*)

CRETE

An island in the Mediterranean, nominally under the suzerainty of Turkey, but continually in insurrection. In 1898 the European Powers established an autonomy under Turkish suzerainty, Prince George of Greece being appointed high commissioner. The constitution of Feb., 1907, provides for an assembly consisting of sixty-five deputies elected for three years. The executive power rests in the high commissioner and a council of four members. In 1908 the Powers decided to gradually withdraw the international troops, and Crete thereafter declared for union with Greece. The hoisting of the Greek flag at Canea in July, 1909, evoked vigorous protest from Turkey, and the whole question of the ultimate disposition of the island remains *in statu quo.* (See IV, *The Balkan Situation.*)

DENMARK

(*Kongeriget Danmark*)

King, Frederik VIII, born June 3, 1843, son of Christian IX, whom he succeeded on the death of his father, Jan. 29, 1906. Heir apparent, Prince Christian, born Sept. 26, 1870. Klaus Bernstein, premier. The constitution of Denmark is embodied in the charter of June 5, 1849. The executive power is in the king and his responsible ministry and the right of making and amending laws in the Diet, acting in conjunction with the king. The king must be a member of the Evangelical Lutheran Church, the state religion. The Diet comprises a Senate, consisting of sixty-six members, and a House of Commons, 114 members, chosen in direct election for three years. Every male citizen thirty years of age and over, not in receipt of public charity, possesses the franchise. The Diet must meet every year in Oct. All money bills are submitted in the first instance by the government. Denmark is divided into eighteen counties, each administered by a governor. In the towns there is a mayor, appointed by the government, with or without aldermen. Primary education is free and compulsory, the schools being maintained by local taxation. Special schools are numerous, horticultural and agricultural schools predominating. The chief industry is agriculture, with considerable manufacturing. Old-age pensions exist. There are 4,888 miles of railroad, of which about one fourth are owned and operated by the government.

The outlying colonies of Denmark have an area of 75,000 square miles, and a population of 127,000, including Iceland, Greenland, and three islands in the West Indies, St. Croix, St. Thomas, and St. John. Iceland, with a population of 78,470, has a local legislature, and under the constitutional law of 1903 a minister appointed by the king and resident at Reykjavik, the capital.

The Danish Government has several times proposed the sale of the West Indian islands to the United States.

THE REPUBLIC OF FRANCE

President, M. ARMAND FALLIÈRES, born 1841, elected Jan. 17, 1906. His Cabinet is responsible to the Chamber of Deputies. The president of the council and prime minister is M. Aristide Briand, appointed July 24, 1909; minister for foreign affairs, M. Pichon.

Since the fall of Napoleon III in 1870, a Republic under the constitution of 1871, revised in 1875, 1884, 1888, and 1889. The President is elected for seven years by the Senate and Chamber of Deputies, acting as a national assembly. The Chamber of Deputies, 584 members, is elected for four years by universal suffrage; the Senate, 300 members, for nine years, one third elected annually, by an electoral body chosen by delegates of the municipal council of each commune, and of the senators, deputies, councilors general, and district councilors of the several departments. The legislative bodies meet annually on the second Tuesday in Jan., unless previously called by the President. The general election of the Chamber of Deputies took place April 24th, resulting in a slightly increased government majority.

For administrative purposes France is divided into eighty-six *arrondissements*, governed by a prefect appointed by the government and by a prefecture council. The unit of local government is the commune, of which there are 36,222, differing widely in size and population. They are governed by municipal councils, whose acts are subject to the approval of the prefect of the department. Each municipal council elects a mayor, who is the representative of the commune and the agent of the central government.

The cardinal proposition of Premier Briand's policy after the elections of 1910, as announced, is a complete reconstruction of the existing system of parliamentary representation. His scheme involves the election of deputies, one third of the whole number at a time, instead of all at one election, as at present; and the representation of the minority, to be effected by the election of deputies by departments, instead of each parliamentary district electing its own representative, as at present; by concentrating its votes upon single candidates, the minority can thus secure representation in each department. It is believed that this system, if adopted, will increase the tendency, already prevalent in France, as well as in Germany, Austria, Italy, Belgium, and other European parliaments, to divide into different groups of deputies, separated by shades of political opinion, so that the government must rely for its support not upon one strong party, but upon a union or combination of several groups of deputies.

To meet the increased cost of government caused by the old-age-pension act, estimated at about $9,000,000, M. Cochery, the minister of finance, proposes three modifications of existing taxes, viz.: (1) A graduated stamp tax on bills and receipts, (2) increased death duties, and (3) graduation and increase of a number of registration duties. The first two proposals have already been discussed in parliament, for they were included in the draft budget for 1910. The proposal for increased stamp duties on receipted bills was decidedly unpopular, and was dropped on account of the opposition. It is now renewed.

Under a law promulgated Dec. 9, 1905, no religion is recognized by the government.

For local educational administration, France is divided into seventeen *circumscriptions*, each with an academic council. The minister of instruction, assisted by the government educational bureaus and inspectors general, directs the public and controls the private schools, all of which are free. Higher education is supplied by the state in the universities and in special and technical schools.

France has 25,100 miles of railways, which are almost wholly *concédés*, and become state property upon the expiration of the concession. In manufactures France ranks third in Europe, her chief exports being textiles, wines, and novelties. (See III. *History*.)

French Dependencies.—The following are the French dependencies in Asia, Africa, America, and Oceania:

	Acquired.	Area.	Population.	Imports.	Exports.
In Africa:					
Algeria	1830–1902	343,500	5,231,850	$87,640,380	$64,015,920*
Sahara	....	1,544,000	800,000	....	....
Tunis	1881	45,779	1,500,000	23,916,691	18,303,732*
Senegal	1637–1880	1,585,810	915,000	21,718,093	16,900,189†
Upper Senegal and Niger	1893		4,415,000		
Guinea	1843		1,498,000		
Ivory Coast	1843		890,000		
Dahomey	1893		749,000		
Mauritiana	1893		400,000		
Congo	1884	669,280	5,000,000	1,949,491	3,266,289†
Reunion	1649	970	201,000	2,296,374	2,950,812†
Madagascar	1643–1896	226,015	2,701,000	5,864,435	4,365,013†
Mayotte	1843	840	96,000	253,419	471,862†
Somali Coast	1864	5,790	180,000	2,592,557	3,880,953†
Total African possessions		4,421,934	24,576,850		
In Asia:				Revenue.	Expenditure.
Indo-China	1679	196	277,000	$23,374,067	$23,374,067†
Annam	1884	309,980	16,317,000	1,202,574	1,129,852†
Cambodia	1862			1,218,659	1,117,216†
Cochin-China	1861			2,406,871	2,271,214†
Tonking	1884			3,682,387	2,401,005†
Laos	1892			403,098	374,031†
Total		310,176	16,594,000		
In America:				Imports.	Exports.
St. Pierre and Miquelon	1635	96	6,000	$978,206	$1,252,284‡
Guadeloupe	1634	688	182,000	2,609,946	3,162,679
Martinique	1635	378	182,000	3,118,195	3,692,060
Guiana	1626	34,060	27,000	2,724,136	2,391,576
In Oceania:					
New Caledonia	1854–1887	7,200	55,800	$1,829,391	$1,653,206
Tahiti, etc.	1841–1881	1,544	30,000	751,910	611,452†

* 1909. † 1908. ‡ 1907.

THE GERMAN EMPIRE

(*Deutsches Reich*)

Emperor, Wilhelm II, King of Prussia, born Jan. 27, 1859, eldest son of Friedrich III, Emperor and King of Prussia; succeeded his father Jan. 15, 1888; married, Feb. 27, 1881, Princess Victoria of Schleswig-Holstein-Sonderberg-Augustenberg, daughter of the late Duke Friedrich; crown prince, Friedrich Wilhelm, born May 6, 1882. Chancellor of the Empire, Herr von Bethmann Hollweg, who succeeded Prince von Bülow upon the latter's resignation, July 14, 1909. Secretary of state for foreign affairs, Baron von Schoen. There are eight secretaries of state for the administrative departments, who are appointed by the emperor, without reference to the political majority of the legislative body, and responsible directly to him. In other particulars the form of government differs from that usually prevailing in the constitutional monarchies of Europe.

Legislative functions are vested in the Diet of the Realm, which consists of the Bundesrat, or Federal Council, representing the various states, and the Reichstag, representing the people of the Empire. The fifty-eight members of the Bundesrat are appointed by the governments of the states for each session. The Kingdom of Prussia has seventeen members, that of Bavaria six, of Saxony four, and Württemberg four—so that the four kingdoms contain a majority of the Bundesrat. All laws of the Empire must receive an absolute majority of the Bundesrat and the Reichstag. The Reichstag contains 397 members, and elects its own president. The members are elected by universal suffrage, for the term of five years. The Diet meets annually; the emperor has the right to prorogue and dissolve, after a vote by the Bundesrat; but prorogation cannot exceed thirty days without the consent of the Reichstag, and in case of dissolution new elections must take place within sixty days. At the recent general elections, the last in 1907, the members returned were divided as follows among political parties:

	1893.	1898.	1903.	1907.
Centre	96	103	100	105
Conservatives	98	74	73	83
National Liberals	53	48	50	55
Social Democrats	44	56	82	43
Radicals and Moderate Radicals	48	43	35	51
Poles	19	14	16	20
Anti-Semites	17	12	9	30
Smaller parties *	32	47	32	10
	397	397	397	397

* Alsatians, Guelphs, Danes, etc.

The German Empire consists of four kingdoms, six grand duchies, five duchies, seven principalities, and three free states or republics.

The following table gives the area and population of each state, the form of government, the head of the state, and number of representatives in the Reichstag:

	Form of Govt.	Reigning Monarch.	Area Eng. Sq. m.	Total Pop. 1905.	Pop. per Sq. m., 1905.	No. Representatives.
Prussia	Kingdom.	Wilhelm II.	134,616	37,293,324	277.3	236
Bavaria	Kingdom.	Otto Wilhelm Luitpold, Prince Luitpold, Reg't.	29,292	6,524,372	222.7	48
Württemberg	Kingdom.	Wilhelm II.	7,534	2,302,179	305.5	17
Baden	Gr. Duchy.	Friedrich II.	5,823	2,010,728	345.3	14
Saxony	Kingdom.	Friedrich August III	5,789	4,508,601	778.8	23
Mecklenburg-Schw.	Gr. Duchy.	Friedrich Franz IV.	5,068	625,045	123.3	6
Hesse	Gr. Duchy.	Ernst Ludwig.	2,966	1,209,175	407.6	9
Oldenburg	Gr. Duchy.	Friederich August.	2,482	438,856	176.8	3
Brunswick	Duchy.	Johann Albrecht, Duke of Mechlenburg. Reg't.	1,418	485,958	342.5	3
Saxe-Weimar	Gr. Duchy.	Wilhelm Ernst.	1,397	388,095	277.8	3
Mecklenburg-Str	Gr. Duchy.	Friedrich Franz IV.	1,131	103,451	91.5	1
Saxe-Meiningen	Duchy.	Georg II.	953	268,916	282.2	2
Anhalt	Duchy.	Frederick.	888	328,029	369.4	2
Saxe-Coburg-Gotha	Duchy.	Charles Edward.	764	242,432	317.3	2
Saxe-Altenburg	Duchy.	Ernst.	511	206,508	404.1	1
Lippe	Principality.	Leopold IV.	469	145,577	310.4	1
Waldeck	Principality.	Friedrich.	433	59,127	136.5	1
Schwarzburg-Rud.	Principality.	Günther.	363	96,835	266.7	1
Schwarzburg-Sond.	Principality.	Karl Günther.	333	85,152	255.7	1
Reuss Elder Branch	Principality.	Heinrich XXIV.	122	70,603	578.7	1
Reuss Junr. Branch	Principality.	Heinrich XIV.	319	144,584	453.2	1
Schaumburg-Lippe	Principality.	Georg.	131	44,992	343.4	1
Hamburg	Republic.	Burgomaster.	160	874,878	5,467.9	3
Lübeck	Republic.	Burgomaster.	115	105,857	920.5	1
Bremen	Republic.	Burgomasters (2).	99	263,440	2,661.0	1
Alsace-Lorraine	Province.	Governor General.	5,604	1,814,564	323.8	15
			208,780	60,641,278	290.4	397

All the German states, except the two Mecklenburgs, have representative parliamentary bodies. The institutions of the two Mecklenburgs are a survival from medieval times. An election law adopted by Hamburg in 1906, introduced proportional representation. Oldenburg, in 1909, substituted universal male suffrage and direct voting for indirect voting and a suffrage based on a tax qualification. The same year Saxe-Weimar substituted direct for indirect voting. In Saxony an election law passed in 1909 reintroduced direct and secret voting. The first elections held under this law, Oct., 1909, resulted most unexpectedly in the Socialists gaining twenty-five seats in the Landtag.

In Prussia the three-class system prevails in the election of members, together with indirect elections and oral voting. In Feb., 1910, the Prussian Government presented plans for electoral reform, by which it is proposed to substitute direct for indirect voting. It continued the three-class voting system. The Bill, after passing the Lower House, was withdrawn by the government May 27, 1910.

Education is general and compulsory throughout Germany, the elementary and secondary schools being supported by local rates. Technical and trade education is a distinguishing feature of the German system.

The constitution provides for entire liberty of conscience, and complete equality among all religious denominations. Protestants constitute about sixty-two per cent, and Roman Catholics about thirty-seven per cent of the total population.

A uniform system of law courts exists throughout the Empire; the appointment of the judges is a state and not an imperial function. There are uniform codes of civil, commercial, and criminal law.

The expenses of the Empire are defrayed from customs, excise, and the profits of the postal and telegraph service and the state railways. The rates of duty on imports are high, as compared with other European nations; they are largely regulated by a complicated series of reciprocity treaties.

Of 35,235 Eng. miles of railroads in Germany, all but 3,294 miles are owned and operated by the imperial or the state governments. Germany stands second to Great Britain among European nations, in the volume, value and variety of her manufactures, which have developed rapidly in the last ten years. (See IV, *International Relations.*)

German Colonies and Dependencies.—The German colonial possessions have an area of 1,000,000 square miles, with a population of about 14,500,000, including about 12,500, Europeans.

	Date of Acquisition.	Area sq. m.	Estimated Population.	Imports.	Exports. 1908
In Africa:					
Togoland	1884	33,700	1,000,000	$2,042,251	$1,654,397
Kamerun	1884	191,130	3,000,000	4,029,327	2,919,331
German South-West Africa	1884–1890	322,450	120,000	7,962,958	1,820,742
German East Africa	1885–1890	384,180	10,000,000	6,188,825	2,609,725
Total African Possessions		931,460	14,120,000		
In Asia:					
Kiauchau Bay	1897	200	33,000	10,185,428	7,797,583
In the Pacific:					
German New Guinea:					
Kaiser Wilhelm's Land	1885–1886	70,000	300,000	173,409	67,483
Bismarck Archipelago	1885	20,000		572,434	342,290
Caroline Islands	1899	560	....	....	....
Pelew Islands	1899	......	....	147,709	79,112
Marianne Islands	1899	250	56,000	....	....
Solomon Islands	1886	4,200	....	....	....
Marshall Islands	1886	150	....	328,095	963,263
Samoan Islands:					
Savaii	1899	660	37,000	595,767	641,095
Upolu	1899	340			

GREECE

(*Kingdom of Hellas*)

King, **Georgios** I, born Dec. 24, 1845, second son of Christian, late King of Denmark; elected King of the Hellenes by the National Assembly at Athens, March 18, 1863, his father acting as guardian until June 27, 1863, when he was declared of age by decree of the National Assembly.

The constitution of Greece, adopted Oct. 29, 1864, vests the legislative power in a single chamber of 225 members, elected by manhood suffrage for four years. A National Assembly for the revision of non-fundamental provisions of the constitution was summoned by proclamation of the king, and met in Athens, Sept. 14, 1910. It was opened by King George in person, who expressed his joy "because of the eminently pacific, liberal, and conservative manner in which the electors had used their supreme political right in choosing delegates to the Assembly and thus again demonstrated that they are capable of guiding the elaboration of the reforms destined to remedy public affairs." After a stormy session of six weeks, the Assembly was dissolved Oct. 23d, in the midst of a ministerial crisis. (See III. *History.*)

The Greek orthodox church is declared the religion of the state, but complete tolerance is granted by the constitution to all other sects. Primary education is compulsory, but indifferently enforced. The cost is born by the communes, with a subvention from the state. Greece is mainly an agricultural country.

ITALY

(*Regno d'Italia*)

King, **Victor Emanuel** III, born Nov. 11, 1869, succeeding to the throne upon the death of his father, Humbert I, July 29, 1900. Heir apparent, Prince Umberto. A constitutional monarchy, composed of the various states of Sardinia, the two Sicilies, the Pontifical states, the Provinces of Lombardy and Venice from the Austrian Empire, the grand duchy of Tuscany, and the duchies of Parma and Modena. The establishment of the present Kingdom was finally effected in 1860. The first Italian Parliament assembled in 1861, and declared Victor Emanuel II, King of Italy. The present domain of Italy, including the remainder of the Papal states, was established by plebiscite in 1870. The executive power resides in the sovereign, acting through responsible ministers. The legislative authority rests in the king and Parliament, the latter consisting of a Senate, composed of the princes of the royal house, and an unlimited number of members, nominated by the king for life. There are now 328 senators. By the electoral law of March 28, 1895, all citizens over twenty-one years of age who can read and write, and possess certain property qualifications, may vote for members of the Lower Chamber, of whom there are 508. The Roman Catholic Church is nominally the ruling state religion; the power of church and clergy is subordinated to the civil government and freedom of worship ordained. By the census of 1901, ninety-seven per cent of the population was Roman Catholic. Primary secular education is free and compulsory. The schools are maintained by local taxation and state grants. Secondary education and special schools are maintained, largely by state grants. The chief manufactures are woolen, cotton, silk, hemp, hats, paper, pottery, glass, and alabaster ornaments, with a large agricultural product, consisting chiefly of wines, olives, raw silk, and fruits. There are numerous mineral products. Salt is a government monopoly. Railroad development is proceeding rapidly. In 1907 there were 10,713 miles open, and 30,000 miles of telegraph line. (See IV, *Dreibund.*)

COLONIES

	Acquired.	Area, Square Miles.	Population.	Revenue and Expenditure.
Eritrea......	1890	45,800	450,000	$1,694,192
Italian Somaliland......	....	129,700	400,000	569,980
Total....		175,500	850,000	

MONACO

A principality, eight square miles in area, population 15,180. Prince Albert, born Nov. 13, 1848; succeeded his father, Sept. 10, 1889. There is a governor general, and a counselor of state. The Roman Catholic is the only church allowed in the principality. The revenue of the state is mainly derived from the gambling tables, one company with a capital of £1,200,000 holding a contract or concession which will expire in 1947. This company bears the cost of spiritual and temporal government, and in addition pays £70,000 annually to the prince for the concession, the amount increasing every ten years by £10,000. On March 28, 1910, Prince Albert assented to the demand of his subjects for the establishment of a parliament.

MONTENEGRO

(*Crnagora—Kara—Dagh*)

King, Nicholas I, Petrović Njegoŝ, born Oct. 7, 1841; date of accession, Aug. 26, 1860. Heir apparent, Danilo Alexander, born June 29, 1871. Prime minister and minister for foreign affairs and justice, M. Tomanovitch. On Aug. 26, 1910, the fiftieth anniversary of the accession of Prince Nicholas, the principality was proclaimed a kingdom by Parliament, and the title of king assumed by the monarch, with the general approval of Europe, and amidst picturesque celebrations of the jubilee.

Montenegro's independence of Turkey was recognized by the Treaty of Berlin, 1878. On Oct. 31, 1905, Nicholas announced the gift of a free constitution, with manhood suffrage, vote by ballot, a single chamber of seventy-four members, and other features of modern constitutional government. The era of peace since the Russo-Turkish war has enabled Nicholas to carry out many projects for the moral and material regeneration of his country. The laws, which formerly sanctioned many superstitions, have been codified with care; the *vendetta* has been supressed, primary education has been made universal, and communications have been opened up by roads and railways.

The prevailing religion is the Greek Church, which is nominally independent of the state, except that the bishops are appointed by the king. The rural clergy are maintained by a tax paid to the government by the head of every household. Elementary instruction is supported by the government and is compulsory and free. Military service is compulsory. The first railroad in the country was opened Dec., 1908, from Antivari to the Lake of Scutari, and is only eleven miles in length. (See IV, *The Balkan Situation.*)

NETHERLANDS

(*Koninkrijk der Nederlanden*)

Reigning Sovereign, Wilhelmina Helena Pauline Maria, daughter of the late King Willem III, born Aug. 31, 1880. Succeeded to the throne Nov. 28, 1890. Became of age Aug. 31, 1898, and was inaugurated Sept. 6. Offspring Princess Juliana Louise Emma Marie Wilhelmina, born Apr. 30, 1909.

The constitution of the Netherlands, after its reconstruction as a kingdom, was given in 1815, revised in 1847, establishing a constitutional and hereditary monarchy. The legislative authority rests conjointly in the sovereign and Parliament, the latter (the States General) of two Chambers. The Upper Chamber consists of fifty members, elected by the provincial states from among highly assessed inhabitants of the provinces, or from high functionaries enumerated by law. All male Dutch citizens above twenty-five years, paying small state taxes, or house rents, are eligible to vote. The Second Chamber numbers 100 deputies, elected directly. Only the government and the Second Chamber may introduce new bills. The Upper Chamber can only approve or reject them, without the power of amendment. The constitution can be altered by a bill declaring there is reason for introducing changes, followed by a dissolution of the Chambers and a second confirmation by a two-thirds vote of a new States General. There is a cabinet of nine members, of which Theodore Heemskerk is premier. A state council of fourteen members, appointed by the sovereign, of which she is president, is consulted on all legislative and executive matters. The opening of the States General took place on Sept. 13, 1910. In her speech from the throne, Queen Wilhelmina referred to the increase in expenditure in many departments, and said bills would shortly be introduced for the revision of the customs tariff and the imposition of a general income tax. Other measures to be submitted would include insurance for workers against illness and old age, the revision of the copyright laws, the reorganization of the internal government of the Dutch East Indies, and an education bill. The minister of finance presented the budget for the coming financial year. The ordinary expenditure is estimated at 206,000,000 florins (about $82,400,000). There will probably be a deficit of 12,600,000 florins (about $5,040,000). The kingdom is divided into eleven provinces and 1,123 communes. Each province has its own representative body, elected for six years. The royal family and the majority of the inhabitants belong to the Reform Church, but complete religious liberty prevails. Primary education is compulsory and free, maintained jointly by the Kingdom and the communes. Private state aided primary education is encouraged, rather than public. Agriculture and fisheries are the chief industries, but there are many distilleries, breweries, and sugar refineries.

Colonies.—The colonial possessions of the Netherlands in the East Indies and West Indies comprise 783,000 English square miles, with a total population of approximately 38,000,000 people. They are about seven times the size of the mother country. Dutch East Indies has been governed by the Crown since the dissolution of the East India Company in 1798, under a governor general, with complete legislative and executive power, except as may reside in the home Parliament. The island of Java is chiefly devoted to agriculture, the government owning most of the real estate. The principal products are sugar, coffee, tobacco, and tin. Dutch West India consists of Surinam, or Dutch Guiana, and the colony of Curaçao on the north coast of S. America. Chief products, sugar, fruits, coffee, rice, maize, and molasses.

NORWAY

(*Norge*)

King, Haakon VII, born Oct. 3, 1872, second son of the King of Denmark. Ascended the throne Nov. 18, 1905. Heir apparent, Prince Olav, born July 2, 1903. President of the Council, W. Konow. Was united with Sweden until June 7, 1905, when the union was dissolved and Norway again became an independent kingdom. The constitution of Norway bears date May 17, 1814. It vests the legislative power in the Storting, or Parliament. The royal veto may be exercised twice, but if the same bill passes the Storting three times, after as many elections, it becomes the law of the land without royal assent. The Storting assembles in Jan. each year. Every Norwegian citizen over twenty-five years of age is entitled to vote, unless receiving parish relief. Since 1907 women are entitled to vote if they or their husbands have paid an income tax. Representatives are chosen every third year—forty-one from towns, and eighty-two from rural districts. The Storting divides itself into two Houses, the former composed of one fourth the members of the Storting, and the other of the remaining three fourths. Primary education is compulsory and free, maintained by local taxation and state grants. Secondary schools are state, local, or private. Agriculture, forestry, mining, timber trading, ship building, and pulp making constitute the chief products. There are 1,800 miles of railroads, mostly owned and operated by the government.

PORTUGAL

(*Reino de Portugal e Algarves*)

Provisional President, Teofilo Braga, appointed upon the successful revolution of Oct. 5, 1910, and the establishment of a provisional republic, following the flight of King Manoel II, son of the late King Carlos I. The provisional president is a poet, philologist, and philosopher, and has an international reputation as a scholar. Alfonso Costa, Minister of Justice, and regarded as the chief organizer of the revolution, is provisional head of the Cabinet. The house of Braganza, from which Manoel was descended, dates from the end of the fourteenth century. On Sept. 23, 1910, King Manoel had opened the new Parliament in person, announcing the resolve of his Cabinet to carry out its liberal program, including the enforcement of the laws regulating religious associations.

The fundamental law at the time of the revolution was the Constitutional Charter granted by King Pedro I in 1826, and altered by additional acts. The Constitution recognizes four powers in the state, the legislative, executive, judicial, and the "moderating authority," which is vested in the sovereign. There are two legislative chambers, the House of Peers and the House of Commons, conjunctively called the Cortes Geraes. A law of July 24, 1885, provided for the abolition of hereditary peerages by a gradual process.

The state religion is Roman Catholic, but all other religions are tolerated. Conventual establishments in Portugal were suppressed in 1834, and their property confiscated for the benefit of the state. Primary education is compulsory, but the law is not enforced, and by the latest census eighty-three per cent of the population cannot read. Agriculture is the dominating industry. Many valuable mines, salt, gypsum, lime, and marble, remain unworked. (See III, *History*.)

COLONIES.

	Area.	Population.	Revenue. 1910.	Expenditure. 1910.
In Africa:				
Cape Verde Islands	1,480	147,424	$139,858	$220,600
Guinea	13,940	820,000	272,860	332,350
Prince's and St. Thomas's Islands	360	42,103	869,955	732,800
Angola	484,800	4,119,000	2,528,610	3,678,340
East Africa	293,400	3,120,000	5,291,440	5,112,760
Total	793,980	8,248,527	$9,102,723	10,076,850
In Asia:				
In India	8,972	895,789	$1,079,480	$1,062,260
Indian Archipelago			139,860	220,600
China: Macao, etc.			639,140	639,140
			$1,858,480	$1,922,000

SEE AND CHURCH OF ROME

Supreme pontiff, PIUS X (Giuseppe Sarto), born at Riese, diocese of Treviso, June 2, 1835; bishop of Mantua, Nov. 10, 1884; cardinal, June 12, 1893; patriarch of Venice, June 15, 1893; elected supreme pontiff as successor of Leo XIII, Aug. 4, 1903; crowned, Aug. 9th following. He is 258th pope in number. Pontifical secretary of state, Rafael Merry del Val. The election of pope is by *scrutiny* of the Sacred College of Cardinals, consisting when complete of 70 members, namely, 6 cardinal-bishops, 50 cardinal-priests, and 14 cardinal-deacons, but rarely comprising the full number. The cardinals are regarded as princes of the church at large. In 1910 the sacred college consisted of 5 cardinal-bishops, 42 cardinal-priests, and 5 cardinal-deacons. In 1910, besides the pope and the college of cardinals, the upper Catholic hierarchy throughout the world comprised 8 patriarchates of the Latin and 6 of the Oriental rite, 165 archbishoprics of the Latin and 19 of the Oriental rite, and 748 bishoprics of the Latin and 52 of the Oriental rite. The central administration of the Roman Catholic church is carried on by a number of permanent committees called Sacred Congregations, composed of cardinals, with consultors and officials. There are now eleven sacred congregations, viz.: holy office, consistorial discipline of the sacraments, council, religious orders, propaganda, index, rites, ceremonial, extraordinary ecclesiastical affairs, studies.

The states with which the Holy See maintains diplomatic relations are Austria-Hungary, Bavaria, Belgium, Luxemburg, Monaco, the Netherlands, Portugal, Prussia, Russia, and Switzerland, together with nearly all the American republics, except the United States and Mexico.

ROUMANIA

King, Carol I, born April 20, 1839. Ascended the throne in 1866, after the abdication of Prince Alexandru Joan, and in 1881 proclaimed king instead of Prince of Roumania by the Assembly. Prime minister, M. J. J. C. Bratiano, 1909.

The constitution now in force was voted by a constituent assembly, elected by universal suffrage in 1866. The Senate consists of 120 members, elected for eight years. The Chamber of Deputies consists of 183 members elected for four years. All citizens of full age, paying taxes, are electors. The prevailing religion is the orthodox Greek Church. The Treaty of Berlin provided that there should be no discrimination against residents of Roumania on account of religious belief, but the Jews have been harshly treated. Education is free and compulsory, but is in a very backward condition. A census in 1899 reported that seventy-eight per cent of the population could neither read nor write. The cereals, wines, and timber are the chief products, the great majority of the population being agricultural. A land bank was organized by the government in 1907 to supply peasants with the means to buy or lease land. (See IV, *The Balkan Situation.*)

RUSSIA

(*Empire of All the Russias*)

Nicholas II, Emperor of All the Russias, born May 18 (new style), 1868; succeeded his father, Emperor Alexander III, Oct. 20, 1894; married, Nov. 26, 1894, Princess Alexandra Alix, daughter of Ludwig IV, Grand Duke of Hesse. Heir apparent, Grand Duke Alexis, born Aug. 12, 1904.

An empire comprising one sixth of the surface of the globe, situated in Europe, and also embracing more than one third the continent of Asia. Nominally a constitutional, hereditary monarchy, but in fact the entire legislative, executive, and judicial power is concentrated in the emperor. On Aug. 19, 1905, an elective state council, or Duma, was created by imperial decree, and later a law was promulgated granting to the population certain liberties of person, conscience, speech, and assembly, establishing the rule that no law shall be effective without the approval of the Duma, and that this body shall have a real participation in the control of the government. The Duma consists of members elected for five years, representing the provinces and great cities; chosen by indirect election made by electoral bodies of delegates elected by the district elective assemblies. Under ukases published March 6, 1906, the Council of the Empire consists of an equal number of elected members and members nominated by the emperor; convoked and prorogued annually by imperial ukase. Elective members of the council are eligible for nine years, one third being elected every three years. Elected members are returned by assemblies of provinces, synods of the Orthodox Church, representatives of the universities and of the bourses of commerce, and by representatives of the nobility and landed proprietors. The Council of the Empire and the Duma have equal legislative powers. Every measure must pass both bodies before it is submitted for the imperial sanction. All laws voted must be approved by the President of the Council and by the Czăr. Bills rejected cannot again be brought forward in the same session, nor can bills rejected by one of the legislative bodies be again proposed without imperial consent. The first Duma, sitting from May 10, 1906, was dissolved July 22. The second Duma, sitting from March 5, 1907, was dissolved on June 16, 1907. The third Duma began its first session Nov. 14, 1907. It is again in session as the Year Book goes to press.

The administration of the empire is intrusted to councils and a ministry, administering fifteen separate branches of the government. The President of the Council of Ministers, Privy Councillor, and Minister of the Interior is M. Stolypin, appointed July 6, 1906. The empire is divided into governments and provinces. There are forty-nine governments in European Russia proper, ten in Poland, eight in Finland, seventeen in Caucasus, four in Siberia. There are nineteen provinces, mostly in Asia. At the head of each government is a governor general, with supreme control and direction of all affairs, whether civil or military. In Siberia the governors general are assisted by a council. In European Russia, the government of the parish is intrusted to the people, and the whole country is divided into 18,012 cantons.

The established religion of the empire is the Greek Catholic Church, officially called the Orthodox Faith, and maintaining relations with the four orthodox patriarchates of Constantinople, Alexandria, Antioch, and Jerusalem. The emperor is head of the church, and appoints to every office therein. With the exception of the Jewish, all religions are nominally free in Russia.

Control and maintenance of primary education is divided between the Ministers of Public Instruction and the Holy Synod (governing body of the Orthodox Church), to which is allotted the larger proportion annually voted for education. Primary education is extremely backward. It is estimated that not more than ten per cent of the total population has received instruction.

A large proportion of Russia is unfit for cultivation. The Obdorsk and Ural mountains contain rich mineral deposits, and Russia is now the largest producer of petroleum in the world, amounting to 410,000,000 poods (of thirty-six pounds) in 1905. The coal output in 1906 was 21,000,000 tons, and there was large production of pig iron, copper, and quicksilver. Manufactures are but little developed, but are increasing rapidly. In 1898 there were 41,647 miles of railroad, exclusive of 2,124 miles in Finland and 1,078 miles of Eastern China railway. About one half the mileage is under government control.

Finland. — The Grand Duchy of Finland was conquered by Russia from Sweden and annexed in 1808. Its area is 144,254 square miles, with about 15,000,000 population. Nearly all the inhabitants are Lutherans. The country was formerly governed by the imperial Finnish Senate of twenty-two members, with a Diet of four estates selected by the people. On Jan. 1, 1907, a new constitution was promulgated by imperial ukase, under which the Parliament consists of a single chamber of 200 members, chosen by direct and proportional election. The suffrage is possessed, with certain exceptions, by every Finnish citizen, male or female, twenty-four years of age. Finland was the first country to concede complete woman suffrage and representation. The Diet exists for three years, unless sooner dissolved. The Grand Duke is the Czar of Russia, who may summon and dissolve the Diet. Legislative measures are brought forward by the ministers as propositions from the Czar. The so-called imperial legislative law of June 30, 1910, deprives the Finnish Diet of its right to pass upon Finnish questions involving imperial interests, including the imposition of taxes, direction of the police, management of the schools, and authorization of public meetings. The Finnish Diet refused in Sept. to approve two bills drafted by the Russian Council of Ministers in accordance with this law, and was prorogued by the Czar, who ordered a new election in Jan., 1911. (See III, *History.*)

Poland, which had its own constitution from 1815 to 1830, and a separate government until 1864, was deprived of this remnant of administrative independence in the latter year. By ukase of the emperor, Feb. 23, 1868, the government was incorporated with that of Russia, and the use of the Polish language in public places and for public purposes was prohibited.

BOKHARA

A Russian vassal state in Central Asia. Reigning sovereign, AMIR SAYID

Abdul Ahad. In 1873, after a Russian invasion, a treaty was signed with that country by which no foreigner can be admitted to Bokhara without a Russian passport, and the state became practically a Russian dependency. The religion is Mohammedan. Chief products: corn, fruit, silk, and hemp. It has some minerals. The Russian Trans-Caspian railroad now runs through Bokhara for a distance of 186 miles.

KHIVA

Reigning sovereign, **Seyid Mahomed Rahim Khan**, succeeded to the throne in 1865; born about 1845. In 1872 a Russian expedition conquered the country and compelled the khan to sign a treaty which puts the state under Russian control. The religion is Mohammedan. The chief products are cotton and silk.

Other Russian dependencies in Asia:

	Area Eng. Sq. Miles.	Population. 1908.
Trans-Caucasia	95,402	6,307,200
Siberia	4,786,730	7,049,200
Steppes	710,905	2,927,900
Turkestan	400,770	5,961,600
Trans-Caspian Prov.	213,855	415,700
Total	6,207,662	22,661,600

SERVIA

(*Kralyevina Srbiya*)

King, **Peter** I, born June 29, 1844; succeeded to the throne June 25, 1903. Heir apparent, Prince Alexander, born Dec. 4, 1888. Prime minister, M. Novakovich. The independence of Servia from Turkey was established by the Treaty of Berlin, July 13, 1878. The constitution voted by the Great National Assembly in 1889 was repealed in 1894. On April 6, 1901, a new constitution was created by the then King Alexander, which, after his death, June 15, 1903, was abolished and that of 1889 revived. Executive power is vested in the king, assisted by a council of eight ministers, who are responsible to the nation. Legislative authority rests in a National Assembly composed of 160 deputies elected by the people—term of service four years. All male citizens twenty-one years of age and paying a tax are entitled to vote. Counties, districts, and municipalities have their administrative assemblies. Servia is divided into seventeen provinces and 1,407 communes. The state religion is Greek orthodox, but all the ecclesiastical officials are under the control of the Minister of Education. There is unrestricted liberty of conscience. Elementary education is compulsory and free. Of the total population in 1900, seventeen per cent could read and write. Servia is an agricultural country, in which nearly every peasant cultivates his own freehold. Servia has considerable mineral resources, worked by the government and by private enterprise.

SPAIN

(*España*)

King, **Alphonso** XIII, son of the late King Alphonso XII, born after the death of his father, May 17, 1886, succeeding at birth his eldest sister.

The executive is vested under the king in a council of nine ministers, reorganized Feb. 9, 1910, with Canalejas as prime minister. The present constitution was ratified by a special assembly proclaimed June 30, 1876, enacting that Spain shall be a constitutional monarchy, and that the power to make laws shall rest in the cortes and with the king. The cortes is composed of a senate and congress equal in authority. There are three classes of senators—senators by their own right, 100 life senators nominated by the king, and 180 senators elected by the corporations of the state, the provincial communes, churches, and universities. One half the elective senators are renewed every five years. The congress is elected by all male Spaniards twenty-five years of age, enjoying full civil rights. There are 406 deputies, of whom ninety-eight are elected by *scrutin de liste* in twenty-eight large districts in which minorities may be represented. The cortes meets every year. The king has the power of convoking, suspending, or dissolving. In the latter case a new cortes must sit within three months.

The national church is the Roman Catholic. An elaborate system of primary compulsory education exists, which is not rigidly enforced, and sixty-eight per cent of the population can neither read nor write, according to the census taken in 1889.

The year has been made memorable in Spain by the determination of Premier Canalejas, strongly supported by King Alfonso, to negotiate a revision of the Concordat of 1851 between Spain and the Vatican, which movement resulted in Aug. in the severance of diplomatic relations between the two courts. Decrees permitting other than Roman Catholics to publicly display emblems of worship, and requiring all monks to register, were especially resented at Rome. The government declares it is not attacking the Catholic religion as such, but is seeking to relieve the state and society from the domination of ecclesiasticism, as maintained by the clergy and the religious orders. The latter own or control a large part of the land and resources of the country, paying no taxes, and carrying on many forms of industry in competition with ordinary labor. It is stated that there are 21,000 church dignitaries in Spain, for whose support annual taxes of about $8,000,000 are levied. While the Catholic population is largely in a majority, the government of Canalejas is strongly supported in parliament, and the indications favor popular support of the policy of nationalism, as opposed to that of clericalism and mediævalism. There is apparent a growing strength in the socialistic movement in Spain.

COLONIES.

	Area.	Population.	Revenue. 1910.	Expenditure. 1910
In Africa:				
Rio de Oro and Adrar	70,000	130,000	$380,000	$380,000
Rio Muni and Cape San Juan	9,800	140,000		
Fernando Po, etc	813	23,846		

SWEDEN

(*Sverige*)

King, GUSTAF V, born June 16, 1858, succeeding to the throne on the death of his father, Oscar II, Dec. 8, 1907. Crown prince, Gustaf Adolph, born Nov. 11, 1882. Prime minister, Admiral Avid Lindman. Sweden is a constitutional monarchy. The king must be a member of the Lutheran Church, the state religion. The constitutional power is exercised in conjunction with the Council of State, or with the Diet, and every new law must have the assent of the Crown. The right to impose taxes is vested in the Diet, consisting of two chambers, both elected by the people, the first containing 150 members elected for six years by the Landstings, or provincial representatives, and by the municipal corporations of the towns and regulated by a special election law. The second chamber, 230 members, is elected for three years by universal suffrage. Every Swede twenty-four years and over, not under legal disability, has the right to vote. Primary education is compulsory and free, maintained by local taxation and state grants. The population is largely devoted to agriculture. Forests are extensive, covering nearly one half the country. Mineral products are large and include iron, copper, lead, nickel, zinc, cobalt, alum, sulphur, marble, and coal. The chief products are butter, iron, paper, and timber. There are 8,305 miles of railroad, one third the property of the state, and 19,313 miles of telegraph.

SWITZERLAND

(*Schweiz—Suisse—Svizzera*)

Switzerland, known as the Swiss Confederation, is composed of twenty-two cantons of varying size, united under the constitution of May 29, 1874. Legislative power is vested in a Parliament of two chambers, a legislative council of 147 members, and a council of state of forty-four members; the chambers united are called the

Federal Assembly. Members of the National Council are elected for three years. Executive power is in the hands of a Federal Council of seven members, elected by the Federal Assembly and presided over by the president of the federation. The President of the Confederation and the Vice President of the Federal Council are elected by the Federal Assembly in joint session for one year, and are ineligible to the same offices until after the expiration of another year. The President for 1910 is M. Robert Comtesse, of La Lagne. The seven members of the Federal Council act as ministers of the seven administrative departments of the Republic. Each of the cantons of Switzerland is sovereign, so far as its independence and legislative powers are not restricted by the constitution. Each has its local government, differing in organization, but all based upon the absolute sovereignty of the people. In many cantons the popular initiative and referendum have been introduced.

A referendum backed by 142,000 signatures and proposing the introduction into the federal constitution of a system of proportional representation in elections to the national council was submitted to the vote of the people of the whole confederation during the year, and rejected by 262,066 votes, against 238,928.

The German language is spoken by the majority of the inhabitants of 15 of the cantons, French in 5, Italian in 2. Primary education is free and nominally compulsory. It is under the control of the canton and municipal authorities. Special schools are numerous and well attended. Though in the main an agricultural country, Switzerland has developed many special industries, including silks, cottons, linen, lace, clocks, watches, gloves, cheese, etc. In 1909 there were 3,200 miles of railroad, 5,500 miles of telegraph lines, and 1,850 post offices.

TURKEY

(*Ottoman Empire*)

Sultan, Mohammed V, born Nov. 3, 1844, son of Sultan Medjid; succeeded to the throne, April 27, 1909, on the deposition of his elder brother, Sultan Abdul Hamid II, as the outcome of the "Young Turk" movement.

By the law of succession in the reigning family, the crown is inherited according to seniority by the male descendents of Othman sprung from the imperial harem, which exists as a permanent state institution: all the children born in the harem are legitimate and of equal lineage, the sultan being succeeded by his eldest son, in case there are no uncles or cousins of greater age.

The Turkish cabinet, reorganized May 5, 1909, consists of thirteen ministers, of whom the grand vizier is Hakki Pasha. The existing form of constitution is a decree of Sultan Abdul Hamid II, of Nov., 1876, which provides for the security of personal liberty and property, for the administration of justice by irremovable judges, the abolition of torture, freedom of the press, and the equality of all Ottoman subjects. Islam is declared the religion of the state, but freedom of worship is granted to all creeds, and all citizens declared eligible to public office. Persistent violation of this constitution led finally to the revolution of April, 1909.

Parliament consists of a senate and a chamber of deputies. Senators are appointed by the sultan, and deputies are elected by electoral delegates, one deputy for every 6,000 such delegates.

The entire empire is divided into vilayets or local governments, a number of which are tributary states, each administered by a governor general representing the sultan, and assisted by provincial councils, the vilayets being subdivided into many minor districts. Of these local governments eight, with a population of 6,130,000, are in Europe; eleven, with a population of 9,000,000, in Asia Minor; five, with a population of 2,500,000, in Armenia and Kurdistan; three, with a population of 1,400,000, in Mesopotamia; six, with a population of 3,675,000, in Syria; two, with a population of 1,050,000, in Arabia; two, with a population of 1,000,000, in Africa. Grand total of population 24,800,000. In 1908 Bulgaria declared itself independent of Turkey, and Bosnia and Herzegovina were annexed by Austria-Hungary. (See III, *History;* IV, *International Relations.*)

Mohammedans form the vast majority of the population of Asiatic Turkey, and about one half the population of European Turkey. In the latter, education is nominally obligatory and free, under government control, but is in most backward condition. The Turkish government publishes no financial accounts of revenue and expenditure. Sept. 1, 1903, a Council of Administration was appointed at Constantinople to readjust the bonded indebtedness of the government, and to administer the funds derived from excise duties, tobacco taxes, etc., for the benefit of the bondholders. The indebtedness thus secured is about $525,943,700.

Agriculture and manufactures are in a primitive condition. In Palestine the establishment of Jewish and German colonies presents an important feature in agricultural development. These colonies are rapidly extending in population and in farm lands under cultivation.

TURKISH PROVINCES.

	Area, Sq. Miles.	Population.	Revenue.	Expenditure.
In Europe and Asia:				
Asia Minor	193,540	9,089,200	....	....
Armenia and Kurdistan	71,990	2,470,900	....	....
Mesopotamia	143,250	1,398,200	....	....
Syria	114,530	3,675,100	....	....
Arabia	170,300	1,050,000	....	....
Total	693,610	17,683,400	....	....
In Africa:			1906.	1906.
Tripoli	400,000	600,000	$458,686	$454,225
Benghazi (Mutessarifat)	398,900	400,000		
Total	798,900	1,000,000		

See also *Egypt.*

AFRICA

The whole of the Continent of Africa has gradually passed under the direct control, or the indirect influence, of various European nations. In a few African countries native sovereigns remain in nominal power, as indicated below. The remainder of the continent, comprising the vast areas still inhabited by the aborigines and many without organized native governments, has been apportioned among the European nations in accordance with claims based upon priority of occupation or exploration, and confirmed by joint agreements between them. For this apportionment and details regarding the countries concerned, see under Great Britain, Belgium, France, Germany, Italy, Portugal, Spain, and Turkey.

ABYSSINIA

(*Mangesti Itiopia*)

Under agreement of Dec. 13, 1906, between Great Britain, France, and Italy, these nations agree to preserve the integrity of Abyssinia, to abstain from intervention in Abyssinian internal affairs, to concert together for the safeguarding of their respective interests in territories bordering on Abyssinia, and to make agreements concerning railroad construction, and equal treatment in trade and transit. The political institutions are of a feudal character, analogous to those of mediæval Europe. Menelik II, King of Shoa, became supreme ruler in 1889. Having no direct heir, he has proclaimed as his successor Lij Yasu, the son of his eldest daughter. A council of ministers has been constituted, which first met in July, 1908, and exercises little authority. The chief industries are pastoral and agricultural.

EGYPT

(*Misr*)

Abbas Hilmi, eldest son of the late Tewfik Pasha, succeeded his father as the seventh Viceroy and third Khedive of Egypt, Jan. 7, 1892. Egypt is tributary to Turkey, to which the Khedive pays annual tribute, but from 1879 to 1883 the country was under the dual control of France and Great Britain. In 1883 Great Britain intervened after the Arabi Pasha rebellion, and has since practically governed the country. British occupation, temporarily undertaken, is now recognized as permanent in the Anglo-French agreement of April 8, 1904, to which the German and other European governments have assented. It involves modifications of the international agreements regarding Egypt for the protection of foreign bondholders, and is confirmed by decree of the Khedive. The agreement confers most-favored-nation treatment upon the commerce of these countries for thirty years. A British agent resident at Cairo has a seat in the council of ministers, in which, together with the Khedive, rests the real executive and legislative authority. There is a General Assembly and Legislative Council for national affairs, with limited powers, and provincial boards for local affairs. The General Assembly consists of the ministry, Legislative Council, and forty-six popularly elected members. The Legislative Council consists of thirty members; its powers are largely consultative. Mixed tribunals, instituted in 1876, have judicial jurisdiction over all civil actions between citizens of different nationalities, and between natives and foreigners. They also have a limited jurisdiction in penal cases.

Popular agitation has continued in Egypt for a number of years, the basis of which is a demand for full parliamentary institutions.

Under the administration of Great Britain several great dams and barrages have been constructed on the Nile, and others are under way. These improvements add 1,000,000 acres to the cultivatable area, mostly devoted to the growth of cotton.

The Suez Canal is the property of an Egyptian company, authorized by the Viceroy in 1856, later confirmed by the Sultan with a concession granted to the late M. de Lesseps for ninety-nine years. The general management is conducted from Paris, under statutes framed in accordance with the French Company Law. In 1875 the British Government purchased the Khedive's share in the Suez Canal for £4,000,000. The affairs of the canal are now conducted by an administrative council of thirty-two members, of whom ten are British. The gross receipts of the canal for 1907 were £4,804,740, and the total expenses were £1,745,700. The number of vessels passing through the canal in 1907 was 4,267; in 1908, 3,795. Of these, 9,495,868 tons were British, and 2,310,507 were German tonnage.

Anglo-Egyptian Sudan.—A convention between the British and Egyptian governments, Jan. 19, 1899, provides for the administration of territory south of the twenty-second parallel of latitude by a governor general, appointed by Egypt with the assent of Great Britain. The British and Egyptian flags are used together, and laws are made by proclamation. The Sudan is divided into thirteen provinces, whose governors are British officers of the Egyptian army, employed under the Sudan Government. The administration is carried on through British inspectors, supervised by district officials, in most cases Egyptian officers lent from the Egyptian army. The civil and criminal codes in force are based on those of India. Six English judges have been appointed, and an educational system organized. About 1,100,000 acres are under cultivation, chiefly cereals, but the growth of Egyptian cotton is extending. Khartum, the capital city, is now in railroad and telegraphic communication with Cairo, and on Dec. 12, 1899, the Sudan was declared open for general traffic. Other railroad lines are being rapidly constructed, and there were, in 1909, 4,965 miles of telegraph in the Sudan. The governor general is Lieut. Gen. Sir Francis Reginald Wingate.

LIBERIA

A negro Republic on the coast of West Africa, between the French colony of the Ivory Coast and the French possessions in the interior and the sea. Liberia had its origin in the efforts of colonization societies in Europe and America to make permanent provision for freed American slaves. The first settlement was made in 1822. It was declared independent in 1847, recognized as a sovereign state by Great Britain in 1848, and by the United States in 1862. The constitution is modeled on that of the United States. The President is elected for four years, the House of Representatives (fourteen members) for two years, and the Senate (nine members) for six years. The agricultural, mining, and industrial development of Liberia is extremely backward. The chief products are palm oil, coffee, rubber, and ivory. Cotton is indigenous, but not cultivated. (See IV. *Liberia.*)

MOROCCO

(*Maghrib-el-Aksa—El Gharb*)

Sultan, Mulai-Abd-el-Hafid, who revolted against his brother, and was proclaimed Sultan in different provinces in 1907 and 1908. He was recognized by the Powers as Sultan, Jan. 5, 1909, upon his agreement to recognize the act of Algeciras. By the Anglo-French Conference of April, 1904, Great Britain recognizes that it appertains to France to conduct the administrative, economic, financial, and military government of Morocco, but reserves such rights as by treaty or usage she has hitherto enjoyed. Reciprocal engagements with respect to trade are to last for thirty years, and for additional periods of five years, failing denunciation a year in advance. Roads, railroads, harbors, etc., remain under state control. These arrangements were accepted by Spain. Upon protest from Germany, a conference made up of delegates from Morocco, the European Powers interested, and the United States, was held at Algeciras, Jan. 16 to April 7, 1906, when an agreement, or general act, was signed by all the delegates. The Sultan signed the agreement on June 18, 1906. Under this agreement there is a Moorish police force, commanded by Moorish officials, assisted by French and Spanish officers, with a Swiss inspector general, the arrangement to continue for five years. A state bank, with a concession for forty years, has been established. It issues bank notes, and acts as treasurer and paymaster of Morocco, and financial agent of the government at home and abroad, and is charged with the rehabilitation of the currency. Other provisions deal with the acquisition of land by foreigners, the levy and collection of taxes, and the authority of the state over public services and public works. The form of government of the Sultan is an absolute despotism, unrestricted by any law, civil or religious.

ASIA

The continent of Asia, except China, Persia, and Afghánistán, is under some form of dependence upon one or another of the European powers, or of Japan. Even in these exceptions European influence and interference with local sovereignty are more or less potent, and constantly increasing. For the countries under the suzerainty of different nations, see Great Britain, France, Germany, Portugal, Russia, and Turkey.

AFGHÁNISTÁN

Habibullah Khan is the reigning amír, succeeding to the throne Oct. 3, 1901. An engagement was made with the British Government by his father, Amír Abdur Rahmán, in 1880, at the end of an insurrection suppressed by British troops, under which he agreed to leave the control of his foreign relations to the British Government, which on its part agreed not to interfere with the internal government of Afghánistán, and in case of foreign invasion, to aid the amír with military protection. By treaty in 1905 the arrangement was formally accepted by the present amír, and remains in effect, except that by an Anglo-Russian agreement, Aug. 31, 1907, Great Britain agreed not to annex or occupy any portion of Afghánistán, or interfere with its internal administration, so long as the amír fulfils his engagements with Great Britain, and the Russian Government agrees that Afghánistán is outside the sphere of Russian influence, and that its political relations shall be conducted through the British Government. The principle of equal commercial opportunity is recognized. The amír receives an annual subsidy of 1,800,000 rupees from Great Britain. Under these agreements the country has been comparatively quiet after a long period of internal wars. The population is estimated somewhat under 5,000,000. The government is an absolute monarchy. Afghánistán is divided into four provinces, each under a governor. The country is chiefly agricultural, and a system of serfdom largely prevails.

BALUCHISTAN

Baluchistan includes British Baluchistan, consisting of Quetta and the Bolan, held on a perpetual lease from the Khan of Khelat since 1883, and other districts assigned to Great Britain by treaty; the native states of Khelat and Las Bela, and the Tribal Areas inhabited by the Marri and Bugti tribes. Total area about 132,000 square miles; population about 915,000. The British territory is administered by an agent of the Viceroy of India. The principal chief of the native states, Mahmoud Khan, of Khelat, receives an annual subsidy from the Anglo-Indian Government of 100,000 rupees. The ruling chief of Las Bela is Jam Mir Kamal Khan, who succeeded in 1896. The country is of great strategic importance, commanding numerous passes to the south of the great caravan route through Kabul and Kandahar. There are 481 miles of railroad.

BHUTÁN

A small, independent state in the eastern Himálayas; population mostly Buddhist. The Anglo-Indian Government pays to Ugyan Wangehuk, the Maharaja of Bhután, a subsidy of 50,000 rupees. Area, 17,000 square miles; population estimated at 400,000. Capital, Panakha.

CHINA

(Ta Ch'ing Kuo—Chung Kuo)

Emperor, P'U-YI, born Feb. 11, 1906; succeeded his uncle Nov. 14, 1908. Son of Tsai-Fung, Prince Ch'un, brother of the late emperor, who is the regent of the empire. The empress dowager, Tzŭ-hsi, who ruled the empire during the reigns of the two previous emperors, both minors, died Nov. 15, 1908.

The imperial power is autocratic, and exercised by decrees, edicts, and rescripts. Numerous councils and advisory bodies exercise the executive authority, chief of which is the Grand Council of six members. There is also the Government Council, established in 1901, and an advisory Senate, established in 1907. The administration is carried on by eighteen boards. The navy is controlled by the viceroys at Tientsin and Nanking in their capacities of ministers superintendent of the northern and southern ports.

Sept. 1, 1906, an edict was issued promising a constitution as soon as the people are ripe for it. Aug. 27, 1908, another decree announced the convocation of a parliament and the proclamation of a constitution in the ninth year from the date of the decree, namely, 1917. During the current year, June 27th, a petition praying for an earlier establishment of the constitution was negatived. Oct. 31, 1909, a decree was issued fixing the classes from which the Imperial Assembly, consisting of two houses, will be elected.

Oct. 3d the newly constituted Imperial Senate was opened by the regent, Prince Ch'un, thus carrying out the second stage in the development of popular representative government in China. Oct. 26th the Senate passed a memorial insisting upon the early convocation of a national parliament, thus joining, somewhat unexpectedly, in the similar demand of the provincial assemblies, which was made and refused in June. Oct. 31st Prince Yu Lang, a member of the Grand Council, announced in the Senate, in the presence of the leading grand councilors, that the entire nation from highest to lowest was agreed upon the necessity of the early establishment of a national parliament. The declaration was accepted as a favorable response to the memorial of the Senate.

The twenty-two provinces are ruled by viceroys responsible to the emperor for the entire administration—political, judicial, military, and fiscal. They are assisted by various high officials, such as the treasurer, judicial commissioner, and the commissioner of education. Each province is subdivided into prefectures ruled by prefects, and each prefecture into districts, each with a district magistrate. Edicts of 1906 and 1908 established local assemblies in the several provinces, and the first elections have been held. Thus far the functions of the provincial assemblies have been purely consultative.

No census has ever been taken of the Chinese population, and estimates differ widely, the latest official estimate placing the population of China proper and the dependencies at 433,553,000; in 1904 the American minister at Peking, Mr. Rockhill, after careful inquiry, fixed the probable population as less than 270,000,000.

Confucianism, Buddhism, and Taoism are recognized religions in China. Confucianism is the state religion, and the emperor is the sole high priest; and he alone, with his immediate representatives, can perform the great religious ceremonies.

Until recent date education of a purely Chinese type prevailed, confined in its scope to the study of Chinese classical literature. An imperial decree of Sept. 3, 1905, swept away the historic system of examinations, and western methods of education, largely organized by European and American agents, are rapidly taking its place. An imperial decree in the current year provides that English shall be the official language for scientific and technical education, and makes the study of English compulsory in provincial high schools of this character. The Imperial University at Peking is a government institution, where the English, French, German, Japanese, and Russian languages, and the principal sciences are taught by European and American professors.

No official statement of the revenue or expenditure of China is published. With some exceptions the entire revenue is collected by provincial agents. The board of finance at Peking issues to each provincial viceroy a statement of the amount required from his province. The amount actually levied greatly exceeds this estimate, and the surplus remains in the hands of the local authorities. The collection of the revenue of the Chinese foreign trade is under the management of the Imperial Customs Service, of which Sir Robert Hart was inspector general from 1863 to 1908.

China is essentially an agricultural country. The land is all freehold, held by families on payment of annual tax. Twenty-seven per cent of the world's supply of raw silk comes from China, and the cultivation of tea is a great industry, suffering somewhat in late years from the competition of Ceylon and Indian teas. There have been recently erected a number of cotton and woolen mills, and flour and rice mills are beginning to supersede the native methods of treating cereals. Iron and other minerals are abundant in several provinces, but the mines are little worked. (See III, *History*.)

CHINESE DEPENDENCIES

Manchuria, area 363,610 square miles, population about 16,000,000, consists of three provinces—Sheng-King, Kirin, and Helungkiang. It was occupied by Russians at the time of the Boxer outbreak. The terms of the Manchurian conference of April 8, 1902, called for its evacuation, and the failure to comply with this stipulation led to the Japanese-Russian war. Since the close of the war the Japanese influence has been steadily progressing in Manchuria, but July 4, 1910, a Russo-Japanese agreement was signed which guarantees the maintenance of the *status quo* in Manchuria as defined in previous arrangements between Russia and Japan, and further provides that, if these arrangements or the agreements concluded by either of the contracting parties with China should be menaced, the governments of St.

Petersburg and Tokio will concert methods for their defense. This convention has been favorably received in Europe, particularly in France and England, Russia being the ally of France, and Japan the ally of England. An agreement of this character between Russia and Japan is believed to make for the establishment of conditions in the Far East upon a permanently satisfactory basis. It takes the place of the earlier proposition of the United States Department of State, under Sec. Knox, for the neutralization of Manchurian Railroad enterprises, which was declined or ignored by both Russia and Japan. It is believed that the development of the Manchurian railroad system, already well advanced, will proceed rapidly under the new agreement.

Mongolia, a vast and indefinite tract between Manchuria and Chinese Turkestan inhabited chiefly by nomadic Mongols and Kalmucks, has been long under the complete control of China. A railroad is now in process of construction under Chinese auspices from Kalgan to Urga, 530 miles, which is expected to open up the commerce of the country.

Tibet, the home of Buddhism, is governed by Chinese representatives and military officers. The nominal head of the government is the Dalai Lama, assisted by a council which includes a prime minister and nine councilors, five of whom are priests and four laymen. By the Anglo-Tibetan conferences of 1890 and 1893, Yatung, on the Indian-Tibetan frontier, was opened for trade. In 1903 a British army under Col. Younghusband was dispatched to secure observance of these conferences. It reached the capital city of Lhasa Aug. 3, 1904, after desperate fighting, and a treaty was signed Sept. 7, under which Tibet agreed to establish markets at Gyangtze and Gartok, to pay Great Britain an indemnity of £166,000, and not to cede, sell, or lease any Tibetan territory to any foreign power without the consent of Great Britain, or to allow any foreign power to interfere in its affairs, or to construct roads or railroads or open mines in Tibet. By an Anglo-Russian convention in 1907, both countries agreed to respect the territorial integrity of Tibet and the suzerainty of China. A Russo-Japanese convention of the same year committed both governments to recognize the territorial integrity of China, and the principle of equal opportunity in commerce and industry in Tibet and other Chinese dependencies. A new agreement between Great Britain and China as to trade relations was signed in 1908, under which the extraterritorial principle is applied to British subjects as long as the same principle applies to China.

Sin-Kiang, consisting of Chinese Turkestan and Zungaria, includes all the Chinese dependencies lying between Mongolia on the north and Tibet on the south. It is under the viceroy of the Province of Kansu. Its area is estimated at 550 square miles, and its population at 1,200,000. The inhabitants are mixed races.

JAPAN

(*Nippon*)

Emperor, Mutsu Hito, born Nov. 3, 1852; succeeded his father, Feb. 13, 1867. Prime minister and minister of finance, Marquis Katsura, July 14, 1908.

Prior to 1889, Japan was an absolute monarchy; in that year a new constitution was promulgated. In the emperor are vested the executive power with the advice of ministers, whom he appoints, and who are responsible to him; and the legislative power with the consent of the Diet. The Privy Council is an advisory body consulted by the emperor. The Diet consists of the house of peers, about 370 in number, composed of male members of the imperial family; princes and marquises above twenty-five years of age; persons appointed by the emperor for state services or for learning; counts, viscounts and barons, to the number of one fifth of each order, and elected for seven years by the respective orders; and peers indirectly elected for seven years by the residents of various districts who pay the highest taxes; the house of representatives contains 379 members elected for four years by male citizens over twenty-five years of age, paying land or other direct taxes.

There is absolute religious freedom,

the chief forms of religion being Shintoism and Buddhism. There is no state religion, and no state support. Elementary education is compulsory. A system of justice founded on modern jurisprudence has recently been established. For local administration the country is divided into forty-seven prefectures, each with a governor and an elected assembly. Agriculture is the principal industry, but manufactures, conducted on the modern western factory system, are rapidly superseding hand industries, particularly in the cotton, silk, hemp, and paper manufactures. There are 5,000 miles of railroads in the five principal islands that comprise Japan, more than half of which are owned and operated by the government. The gold standard was adopted in 1897.

By treaty with Great Britain and other European powers, in 1894, the right of Japan to frame its own customs policy was acknowledged; foreign jurisdiction in the treaty ports was abolished in 1899, and in return the country was thrown open to European traders.

Formosa was ceded to Japan by China by treaty ratified May 8, 1895. Many improvements have been effected in the island by the Japanese administration, including a complete educational system. Three hundred miles of railroad have been opened in the island, and many highways contructed.

Other Japanese dependencies are the Pescadores Islands, twelve in number, Sakhalin, and the leased territory of Kwantung. (See *Korea;* also III, *History;* IV, *International Relations —Manchuria.*)

KOREA

(*Cho Sen, or Dai Han*)

Emperor, Chök Yi, born March 25, 1874; succeeded his father July 20, 1907, upon the latter's abdication.

Until 1894 China was the suzerain of Korea. By the Treaty of Shimonoseki, 1895, the independence of Korea was acknowledged by China, and Japanese influence became dominant; the struggle of Russia and Japan for the control of the peninsula ended in the Portsmouth treaty, Sept. 5, 1905, by which Russia acknowledged the paramount interests of Japan in Korea, and engaged not to obstruct or interfere with her control of the external relations and internal affairs of Korea. By the terms of this treaty Japan was represented at the court of the emperor by a resident general, until Aug. 22, 1910, on which date, by treaty between the Emperor of Japan and the Emperor of Korea, the kingdom was formally annexed to Japan, and the latter country assumed the entire government of the country. The treaty provides that Japan will accord to the Emperor of Korea and the crown prince, and their heirs, such titles and honors as are appropriate to their rank, and "sufficient annual grants." Simultaneously with the promulgation of the decree of annexation, a proclamation announced the change of the name of the country to Cho Sen. Treaties heretofore concluded by Korea with foreign countries ceased to be operative, and Japan's existing treaties, so far as practicable, were applied to Korea. For a period of ten years, the existing tariffs will apply to foreign goods imported; and the existing open ports of Korea, with the exception of Masampo, will be continued as such, thus insuring the "open door." The annexation of Korea, under these conditions, was accepted without protest from any foreign nation, and without disturbance in the peninsula.

Regulations for the government of Korea were promulgated at Tokio, Sept. 30, 1910. They provide for a governor general with authority to make ordinances subject to the approval of the Emperor of Japan. A premier and privy council to administer affairs will be appointed. The governor general is Lieut. Gen. Viscount Terauchi, heretofore the resident general, and the deputy resident general, Isaburo Yamagata, is president of the privy council. The new regulations do not contemplate any changes materially affecting the condition of foreigners as they existed prior to the annexation. No change will be made in the status of missionaries. Land ownership by foreigners will remain in the nature of leases, until a system of registrations has been established, when these leases will constitute ownership. Mining rights already secured will be protected.

NEPAL

An independent kingdom in the Himâlayas, maintaining friendly relations with the Anglo-Indian Government, which has a resident at the capital. The ruler is the Maharaja Dhiraj, born in 1875, who succeeded in 1881. Area about 54,000 square miles; population estimated from 2,000,000 to 5,000,000.

OMAN

An independent state in Southeastern Arabia, ruled by Sultan Seyyid Feysil, who succeeded in 1888, being recognized by the British Government which has a resident agent at Maskat, the capital. Area, 82,000 square miles; estimated population, 500,000.

PERSIA

(*Irân*)

Until 1906 Persia was under a form of government similar to that of Turkey; in that year, after a popular insurrection, a decree was issued by the shah, convoking a mejliss, or national assembly, and in Oct., 1907, a constitution was confirmed by the then reigning shah, Mohamed Ali, which limited the sovereign's prerogatives and ecclesiastical authority, granted liberty of conscience, of person, education, speech, and press, and defined the duties of the parliament and the responsibility of the ministry. The first parliament was dissolved June 23, 1898, and decrees were issued announcing the abolition of the national council. Insurrection followed; the nationalists entered the capital, Teheran, July 13, and the shah fled, abdicating July 16. A provisional government was formed, and Sultan, AHMED MIRZA (born Jan. 20, 1898), was proclaimed shah, with Azud el Mulk, chief of the Kajar tribe, as regent. Elections immediately followed, and in Nov., 1907, the new parliament was opened by the shah, but only sixty-seven members were present, 156 being the prescribed membership. At subsequent sessions, the attendance has been equally limited, and no attempt has yet been made to elect a senate. The government is nominally conducted by a cabinet of eight members. The country is divided into thirty-three provinces, under governors general, who administer justice and collect the revenues, derived in part from payments in cash or in kind, assessed by the government, and in part from customs duties, postal, and telegraph receipts, and the proceeds of concessions. The chiefs of the nomad tribes exercise authority over them, and collect the revenues. They are mainly Arabs, Turks, Kurds, and Leks, and number about 2,000,000 in a population estimated at 9,500,000. The country is largely desert and sparsely populated. The products are chiefly silk, fruits, gums, carpets, and tobacco.

Chaotic conditions in Persia, and the rival interests of Great Britain and Russia led to an Anglo-Russian convention, Aug. 31, 1907, under which these nations agreed between themselves to limit the spheres of their respective interests in Persia to the Persian provinces adjoining the Russian frontier on the one hand, and the British frontier on the other. The two powers agree to respect the integrity and independence of Persia, but contemplate the contingency of joint financial control in conformity with the terms of the agreement. The debt of Persia is £5,470,000, of which £3,300,000 is to the Russian Government, and £320,000 is to the British. No official statistics of revenue and expenditure are published and the country is practically bankrupt. (See IV, *The Persian Situation.*)

SAMOS

An island off the coast of Asia Minor, forming a principality under the sovereignty of Turkey, under the guarantee of France, Great Britain, and Russia, Dec. 11, 1832. Area, 180 square miles; population, 53,000. The industries are the manufacture of wine, oil, cigarettes, leather, and brandy.

SIAM

(*Sayam, or Muang Thai*)

King, CHOWFA MAHA VAJIRAVUDH, born Jan. 1, 1880, succeeded to the throne Oct. 23, 1910, immediately upon the death of his father, Chula Longkorn, who had reigned since 1868.

He was a progressive ruler, governing the country along European lines, building railroads and public works, and his reign was one of notable peace and prosperity. He also built a navy consisting of twenty-two small vessels.

The executive power is vested in the king, advised by a cabinet of nine members, most of the portfolios of which are held by his half-brothers and sons. By royal decree, Jan. 10, 1895, a legislative council was created, composed of ministers of state and others, not less than twelve in number, appointed by the crown. An important article gives the legislative council power to promulgate laws without royal assent, in the case of any temporary disability of the crown. The Siamese Malay states are administered by the rajahs, mostly under the control of commissioners sent from the capital. The Malay states retain, however, a certain measure of independence.

By the Anglo-French conference April, 1904, the territory of the kingdom was defined and delimited, and several provinces transferred to French rule. By a treaty of March 10, 1909, certain tributary Siamese states passed under the territorial rights of Great Britain. In recent years foreign influence has been permitted to introduce many of the methods of western civilization, under advisors administrative, judicial, legislative and local, representing the English, French, Japanese, and American governments. A new penal code went into effect Sept. 21, 1908, and other codes are being framed. The prevailing religion is Buddhism, and education is chiefly in the hands of the priests. A British officer occupies the post of financial adviser, and most of the departments of the government are either directed or influenced by officers representing other European nations. The financial position of the kingdom is highly favorable, the revenue steadily increasing, and the expenditures kept in check. Considerable railroad construction is in progress, a loan of £3,000,000 for that purpose having been negotiated in 1907. The principal sources of revenue are the opium and spirit taxes, lotteries, customs, post, telegraph, and railroads.

LATIN AMERICA

Albert Hale

The term Latin America needs definition. In one sense it should include even a part of Canada, because the French had much to do with the early settlement of that country. More precisely speaking, it should refer to most of the West Indies, for the numerous islands of that group were discovered and settled by French or Spanish. Many of them are to-day, however, possessions of European governments (Porto Rico belonging to the United States), and as such are referred to under those governments. The same is true of French Guiana and of British Honduras. In the restrictive sense, therefore, the term should be applied only to those portions of the western hemisphere which are self-governing. This signifies Brazil, a Portuguese-speaking Republic, Haiti, a French-speaking Republic, and the eighteen other republics in which Spanish is the national language, these being grouped under the term Spanish America. The natural order of discussing these republics would be geographical, but in the Year Book the alphabetic order is more suitable.

It must be stated, in explanation of the lack of uniformity in dates (See I, *International Statistics*), that the latest available official statistics have been used. Not all of these republics issue reports with the promptness of European governments, but as only official figures have been used (with few exceptions), it is necessary, in presenting the data, to employ the figures of an earlier year in some instances.

ARGENTINA

(*Republica Argentina*)

Juan de Solis, a Spaniard, explored the Rio de la Plata in 1508. Sebastian Cabot entered the river in 1526. The Spanish Crown governed the whole region from the appointment of Mendoza in 1536. In 1776 the territory was separated from the viceroyalty of Peru. May 25, 1810, the revolution for independence from Spain began, and this date is, therefore, the national holiday.

The Argentine Republic lies between 22° and 56° south latitude, and 53° and 57° west (Greenwich) longitude. It is bounded by the republics of Chile, Bolivia, Paraguay, Brazil, and Uruguay, and the Atlantic Ocean. The chief physical characteristics of the country are its immense level plain stretching from the ocean and the rivers La Plata and Parana westward to the Andes; the slope of these mountains, and the diversity of climate (temperate for the most part), together with a richness of soil which permits the cultivation of sugar, the grape, cotton, corn, wheat, oats, alfalfa, linseed, cattle, and sheep. In the north are forests of subtropical woods, quebracho being extensively gathered.

The government is a Federal union of states, and the capital is Buenos Aires. There are fourteen provinces and ten territories as follows:

	Capital.
Buenos Aires	La Plata
Catamarca	Catamarca
Cordoba	Cordoba
Corrientes	Corrientes
Entre Rios	Parana
Jujuy	Jujuy
Mendoza	Mendoza
Rioja	La Rioja
Salta	Salta
San Juan	San Juan
Santa Fe	Santa Fe
Santiago del Estero	Santiago del Estero
San Luis	San Luis
Tucuman	Tucuman

TERRITORIES

	Capital.
Chaco	Resistencis
Chubut	Rawson
Formosa	Formosa
Los Andes	San Antonio
Misiones	Posadas
Neuquen	Chos-Malal
Pampa Central	General Acha
Rio Negro	Viedma
Santa Cruz	Puerto Gallegos
Tierra del Fuego	Ushuaia

The constitution was adopted in 1853. It provides for two legislative houses—Senators and Representatives (Deputies). There are two senators from each state and from the Federal district. Deputies are elected by direct popular vote, for four years, one for every 33,000 inhabitants.

The President, Dr. Roque Saenz Peña, began his six years' term of office Oct. 11, 1910. There is one Vice President; the Cabinet consists of eight ministers.

The gold *peso* is worth $0.965 United States gold. The gold *peso* bears, according to the conversion law of 1902, a fixed ratio to the paper *peso*, of $2.2727.

COMMERCE	1909
Chief articles exported:	
Agricultural products	$230,503,996
Stock-raising products	153,548,356
Forest products	8,927,362
Miscellaneous products	2,876,087
Hunting and fishing products	752,020
Mining products	742,707
Chief articles imported:	
Textiles	$59,923,699
Iron and steel manufactures	36,575,232
Railway equipment and wagons, etc	31,711,285
Building materials	28,365,889
Food products	23,014,691
Coal, coke, and mineral products	21,758,269
Agricultural machinery	16,651,610

Agriculture is the ranking industry. Of 19,000,000 hectares (hectare equals 2.47 acres) the greater part is given to farm products: wheat, corn, linseed, oats, sugar, and grape. Some mining is carried on.

BOLIVIA

(*Republica Boliviana*)

Pizarro invaded this region in 1532. The Indians were conquered, and were made to work the rich mines of the country, which for years produced enormous wealth for Spain. In 1780 they revolted but were again conquered. In 1809 the people rose against Spain, and on Bolivian soil was fought the decisive battle, at Ayacucho, Dec. 9, 1824, which drove Spain from South America. Upper Peru, as then called, was given the name of Bolivia in honor of Simon Bolivar, and declared independent.

Bolivia is bounded by Chile, Peru, Paraguay, Brazil, and Argentina, and has no sea coast. The chief physical characteristics are an immense interior plateau practically at an elevation of 12,000 feet, on which are the wonderful mineral resources of the country and the larger portion of the population; and great slopes eastward toward the Amazon and La Plata watersheds, very sparsely populated but capable of immense agricultural production.

The government is representative, having a Senate and a Chamber of Deputies, both elected directly by the people, the former for six the latter for four years. The constitution was adopted in 1880.

The President, Dr. Eliodoro Villazon, began his four years' term of office Aug. 6, 1909. There are two Vice Presidents. The Cabinet consists of six ministers. There are eight provinces as follows:

	Capital.
Beni	Trinidad
Chuquisaca	Sucre
Cochabamba	Cochabamba
La Paz	La Paz
Potosi	Potosi
Oruro	Oruro
Santa Cruz	Santa Cruz
Tarija	Tarija

La Paz and Sucre are the capitals of the Republic.

The Boliviano is on a gold basis, and is worth $0.389 United States gold.

The principal exports are tin, rubber, silver, copper, bismuth, and cacao.

BRAZIL

(*Estados Unidos do Brazil*)

Pedro Alvares Cabral, a Portuguese, touched the shores of Brazil, near Bahia, in 1500. The name was derived from the dyewood found there. Portugal claimed the country, but French, English, and Dutch, the last with success around Pernambuco, struggled for it. In 1640 Brazil became a viceroyalty, and in 1808 King John of Portugal removed his court and capital to Rio de Janeiro. A bloodless revolution, Nov. 15, 1889, expelled Dom Pedro, the emperor, from the country, and since that date, the national holiday, it has been a Republic. A census was taken in Dec., 1910.

Brazil touches every country (including the Guianas) in South America excepting Chile. It lies between latitude 4° 22′ north and 33° 45′ south, and longitude 34° 40′ and 73° 15′ west. Its great natural divisions are: (1) Tropical, (2) Central, and (3) Southern Brazil, each characterized by distinctive products: rubber, cacao, sugar, tobacco, and hard woods; coffee, herva matte (Paraguay tea), grains, and cattle. The interior, south of the Amazon basin, is a moderately elevated plateau on which can be cultivated subtropical and temperate products; the climate is modified by the altitude.

The president, Marshal Hermes da Fonseca, began his six years' term of office Nov. 15, 1910. There is one vice president. The cabinet consists of seven members.

The government is a Federal union of states, and the capital is Rio de Janeiro. There are twenty states, beside the federal district territory of Acre.

	Capital.
Alagoas	Maceió
Amazonas	Manaos
Bahia	São Salvador (Bahia)
Ceará	Fortaleza
Espirito Santo	Victoria
Goyaz	Goyaz
Maranão	Maranão
Matto Grosso	Cuyaba
Minas Geraes	Bello Horizonte
Pará	Belen (Pará)
Parahyba do Norte	Parahyba
Parana	Curitiba
Pernambuco	Recife (Pernambuco)
Piauhy	Therezina
Rio Grande do Norte	Natal
Rio Grande do Sul	Porto Alegre
Rio de Janeiro	Nictheroy
Santa Catarina	Florianopolis
São Paulo	São Paulo
Sergipe	Aracaju

The constitution was adopted in 1891. It provides for two legislative houses—the senate and chamber of deputies. There are three senators for each state and for the federal district, elected by direct vote for nine years, but renewed every three years. The deputies are elected by direct vote, one for every 70,000, for three years.

The gold *milreis* is worth $0.546 United States gold. The paper *milreis* fluctuates, but has remained of late close to thirty-two to thirty-three cents gold.

COMMERCE

Chief articles exported:	1909
Coffee	$161,922,682
Rubber	91,578,388
Hides	8,812,660
Herva Matte	8,025,333
Cacao	7,739,870
Tobacco	6,443,681
Skins	4,709,492
Sugar	3,247,504
Cotton	2,861,662
Chief articles imported:	
Manufactured goods	$95,673,783
Food products	50,049,663
Raw materials	32,573,602
Live animal products	1,393,077

Agriculture is the ranking industry, as may be seen from the great preponderance of the two world staples—coffee and rubber—in the exports. Considerable mining is conducted, gold and manganese being produced and exported in quantities above the million-dollar value; diamonds are also found and exported. In the south preserved meat is a product highly valued. Coal has been discovered, but not continuously worked as yet. Rice growing is a recent development and promises to be profitable. Cotton, jute, and woolen mills are in active operation, and the first especially are engaging considerable capital.

CHILE

(*Republica de Chile*)

Pizarro sent from Peru a first unsuccessful expedition to the south, but in 1540 Valdivia advanced as far as Santiago and founded that city. The Araucanian Indians opposed the Spaniards and were never completely conquered. Sept. 18, 1810, a provisional government was established, and independence was finally secured.

Chile extends from 17° 57′ to 55° 59′ south latitude, with a coast line of 2,625 miles; its longitude is about the 70° meridian from Greenwich, as the average width is only ninety miles. It touches Argentina, Peru, and Bolivia. The physical characteristics of the country are the hot and arid region on the north, from which most of the minerals come, the beautiful and productive central valley, and the colder and more wooded southern portion, which yields coal and lumber and offers pasturage for cattle.

The President is Ramon Barros Luco. There is one Vice President. The Cabinet has seven members.

The government is of the centralized republican form. The capital is Santiago. There are twenty-three provinces, as follows:

	Capital.
Antofagasta	Antofagasta
Aconcagua	San Felipe
Atacama	Copiapo
Arauco	Lebu
Bio-Bio	Los Angeles
Cautin	Temuco
Chiloe	Ancud
Colchagua	San Fernando
Concepcion	Concepcion
Coquimbo	La Serena
Curico	Curico
Linares	Linares
Llanquihue	Puerto Montt
Malleco	Angol
Maule	Cauquenes
Nuble	Chilian
O'Higgins	Rancagua
Tacna	Tacna
Talca	Talca
Tarapaca	Iquique
Valdivia	Valdivia
Valparaiso	Valparaiso
Magallanes (Territory)	Punta Arenas
Santiago	Santiago

The constitution was adopted in 1833. It provides for a Congress consisting of a Senate and a Chamber of Deputies. Senators are elected by direct vote in proportion of one for every three deputies, for a term of six years, partially renewed every three years. Deputies are elected by direct vote for three years, one for every 30,000 inhabitants.

The gold *peso* is worth $0.365 United States gold. The paper *peso* fluctuates, its mean value for 1909 having been twenty-one cents United States gold.

COMMERCE

Chief articles exported:	1909
Mineral products (nitrates, copper, silver)	$86,949,963
Vegetable products (wheat, lumber, wine)	11,171,568
Animal products (hides, frozen meats)	8,340,730
Wines and liquors	56,532
Chief articles imported:	
Textiles	$23,090,729
Mineral products	16,845,468
Coal, oils, etc	16,532,359
Vegetable products	10,508,948
Machinery	10,174,882
Animal products	10,065,394
Paper, etc	2,537,925
Chemical products	2,016,405

Mining, due to the extensive working of the nitrate deposits, is the ranking industry; there is also a considerable amount of silver ore, copper concentrates, borax, iodine (from Chile saltpeter), and coal produced. In agriculture about twenty-five per cent of the available land is cultivated, the crops being wheat, corn, beans, barley, potatoes, and flax, while cattle and the grape are important features.

COLOMBIA

(*Republica de Colombia*)

Columbus in 1502 sailed along the Colombian coast, and in 1508 settlements were made. In 1536 the interior plateau was occupied. It was called New Granada, and made a viceroyalty. The revolt for independence was begun in 1810. A union between Colombia, Ecuador and Venezuela was effected under Bolivar, but dissolved in 1831. At one time it was a federation of states.

The Republic of Colombia lies between south latitude 2° 40′ and north latitude 12° 25′, and from west longitude (Greenwich) 68° to 79°. It touches Brazil, Ecuador, and Venezuela. Three chains of mountains give a variety of climate to the interior, but the coast line is tropical. The interior is largely an immense plateau, although toward the Amazon basin there is again a tropical area sloping eastward. In the valleys of the rivers draining north are immense deposits of precious minerals, gold, silver, platinum (the yield of this metal being second only to that of Russia), and the emeralds of Colombia supply the markets of the world. Coffee, cacao, sugar cane, tobacco and bananas are exported, and the hard wood forests are worked. Rubber is found, and ivory nuts are gathered in abundance.

The president, Carlos E. Restrepo, began his four years' term of office, July 13, 1910. There is no vice president; the cabinet has six members.

The government is of the unitary republican form. The capital is Bogota. There are thirteen departments or provinces, as follows:

	Capital.
Antioquia	Medellin
Bolivar	Cartagena
Boyaca	Tunja
Caldas	Manizales
Cauca	Popayan
Cundinamarca	Bògota
Huila	Neiva
Magdalena	Santa Marta
Nariño	Pasto
Panama	Panama *
Santander	Bucaramanga
Tolima	Ibague
Valle	Cali

* Language of Decree, April 16, 1910.

The constitution was adopted in 1886 (modified in 1905). It provides for a senate and house of representatives. The senators are elected by electors for a term of four years, three members for each department. Representatives are elected by direct vote, for four years, one for every 50.000 inhabitants.

The gold *peso* is worth $1 United States gold. There is a gold *condor* equal to $9.647 United States gold. The paper *peso* has an exchange value of only one cent gold.

Coffee, cattle, hides, rubber, tobacco, ivory nuts and mineral products are the chief exports of Colombia. The principal imports are cotton goods, flour, lard, petroleum, sugar and machine-made articles of various kinds. Bananas are grown yearly in greater abundance. Gold is known to exist in every department, and is produced in commercially profitable quantities in some of them. The manufacturing industry of the country has not developed extensively. There are mills for spinning and weaving, and grinding sugar cane, and flour mills in the interior, but none of these produce more than enough to supply local demand.

COSTA RICA

(*Republica de Costa Rica*)

Columbus landed on the coast of Costa Rica in 1502, and from that time it was called by the name it now bears "the rich coast." The country was slowly settled by the Spaniards. It belonged for years to the captain generalcy of Guatemala as part of the viceroyalty of New Spain, and revolted with all Central America in 1821. It formed part of the original Central American Federation, but withdrew and became independent in 1829. The title of republic was formally adopted in 1847.

Costa Rica is situated between latitude 8° and 11° 16′ north, and longitude 81° 35′ and 85° 40′ west (Greenwich). It touches Nicaragua on the north and Panama on the south; east is the Caribbean Sea, west the Pacific Ocean. There is a tropical zone on the Atlantic Coast about twenty-five miles wide, abundant in forests of hard woods, and suitable, when cleared, for the great crop of the country, bananas. In the interior are fine coffee areas, and all the crops of the subtropical and temperate zones can be cultivated. The west coast is drier and less productive, but in this region are mines of gold and silver; nickel, iron, and manganese are also known to exist.

The president, Ricardo Jimenez, began his four years' term of office May 8, 1910. There are three *designados*, corresponding somewhat to a vice president. The cabinet has four ministers.

The political divisions of the government consist of seven provinces, as follows:

	Capital.
San Jose	San Jose
Alajuela	Alajuela
Heredia	Heredia
Cartago	Cartago
Guanacaste	Liberia
Comarca of Puntarenas	Puntarenas
Comarca of Limon	Limon

The capital is San José.

The constitution was adopted in 1871, and has been only slightly modified since. The congress consists of one legislative body, called the Chamber of Deputies, elected by indirect vote (through electors chosen by the people), at the rate of one deputy for every 8,000 inhabitants. Deputies serve for four years, but the chamber is renewed by halves every two years.

The *colon* (sometimes called a *peso*) is a gold coin and is worth $0.465 United States gold.

COMMERCE

The chief articles exported:	1909
Bananas	$4,355,045
Coffee	2,639,873
Gold and silver	792,847
Hides (cattle)	105,020
Rubber	71,756
Cacao	55,765
The chief articles imported:	
Cotton goods	$693,521
Flour	463,573
Machinery	223,747
Lard	157,242
Railroad material	119,146
Lumber	118,057
Electric goods	104,785

The production of bananas and coffee is the great industry. Cacao is increasing in amount, and the breeding of cattle is becoming more important; the government has laws encouraging this industry. The mines have always been known, and recently modern machinery has been introduced to increase the output.

CUBA

(*Republica de Cuba*)

The island of Cuba was discovered and occupied by Columbus in 1492. It was long the stronghold of Spanish power in America, and many efforts at revolt were made. Independence was acknowledged in 1898, after the Spanish-American War.

Cuba, the largest island of the West Indies, lies between 19° 40′ and 23° 33′ north latitude, and 74° and 85° west longitude (Greenwich); its length is about 730 miles, and its average width fifty miles. Several irregular mountain chains cross it, and in all sections the land is fertile. All the fruits of the tropics and subtropics grow there, and the forests have abundance of hard woods. The mines are extensive, copper, iron, and manganese being especially valuable, gold and asphalt also being known to exist.

Havana is the capital of the republic, and there are six provinces—viz.:

	Capital.
Pinar del Rio	Pinar del Rio
Havana	Havana
Matanzas	Matanzas
Santa Clara	Santa Clara
Camaguey	Camaguey
Oriente	Santiago de Cuba

The constitution was adopted in 1901. It provides for a senate and a house of representatives, forming the National Congress. Senators are elected indirectly for a term of eight years, at the rate of four senators for each province, being renewed by halves every four years. Representatives are elected by popular vote, at the rate of one for every 25,000 inhabitants, and the house is renewed by halves every two years.

The constitution embodies a law enacted by the United States Congress, authorizing the President of the United States to make over the government of the island to the Cuban people as soon as Cuba should undertake to make no treaty with any foreign power endangering its independence, to contract no debts for which the current revenue would not suffice, to concede to the United States Government a right of intervention, and also to grant to it the use of naval stations, The president, José Miguel Gomez, began his four years' term of office Jan. 28, 1909. At the recent election, Nov. 2d, the Conservative Party slightly increased its strength in the House of Representatives; but the Liberal Party, to which Pres. Gomez belongs, retains a working majority. There is one vice president. The cabinet has eight secretaries.

The republic has as yet no distinct coinage of its own; all financial and most commercial transactions are transacted in terms of the United States gold dollar.

COMMERCE

Chief articles exported:	1909
Sugar (all kinds)	$70,996,726
Tobacco (unmanufactured)	20,072,681
Tobacco (manufactured)	12,938,624
Copper and manganese	2,543,068
Fruits	2,326,854
Woods	1,436,045
Sirups	1,196,899
Hides and skins	1,030,811
Chief articles imported:	
Cereals	$11,640,991
Meats	9,627,128
Cotton and its textiles	8,023,562
Iron and steel	4,523,952
Machinery	4,108,560
Manufactures	3,724,147
Foods, not in above	3,660,606
Woods, etc	2,042,161

Agriculture is the leading industry. Sugar and tobacco have a world-wide reputation, and of late years fruit growing has added to the island's staple crops. Live stock and hard woods are also of great value, and the mines produce a noticeable amount for export.

DOMINICAN REPUBLIC

(*Republica Dominicana*)

Columbus discovered the island in 1492 and named it Hispaniola. Its history was stormy from the beginning, being the home of pirates and the disputed possession of Spain and France. In 1821 the inhabitants of the eastern portion of the island declared their independence, but changes of government have taken place since then. The island is altogether tropical, but in the elevated regions the climate is temperate and many products of the temperate zone grow well.

The Dominican Republic occupies the eastern and larger part of the island of Santo Domingo or Haiti; it touches the republic of Haiti at the western border, its nearest neighbor being Cuba. It is essentially an agricultural country, but has rich though undeveloped mines.

The government is of the unitary form. The capital is Santo Domingo. There are twelve provinces—viz.:

	Capital.
Santo Domingo	Santo Domingo
Seybo	Santa Cruz del Seybo
Azua	Azua
Santiago	Santiago de los Caballeros
Espaillat	Moca
La Vega	Concepcion de la Vega
San Pedro Macoris	San Pedro Macoris
Barahona	Barahona
Samana	Santa Barbara de Samana
Pacificador	San Francisco de Macoris
Puerto Plata	San Felipe de Puerto Plata
Monte Cristi	San Fernando de Monte Cristi

The constitution was adopted in 1908. It provides for the national assembly, composed of two branches—senate and chamber of deputies. Senators are elected one for each province, by indirect vote, for a term of six years, one third being renewed every two years. Deputies are elected indirectly, according to population, one half every two years, for a term of four years.

The president, Ramon Caceres, began his six years' term of office July 1, 1908. The cabinet consists of seven ministers.

The United States gold dollar is the unit for financial transactions.

ECUADOR

(*Republica del Ecuador*)

Pizarro, after conquering Peru, sent Benalcazar northward, who entered Quito in 1534 and subdued the people. The region belonged alternately to the viceroyalty of Peru and New Granada. Revolt against Spain was started in 1909, and the republic was established in 1830.

The Republic of Ecuador touches Peru, Brazil, and Colombia. It has a coastal area of tropic climate, but for the most part lies at such an elevation that the climate and chief products are those of a subtropic and temperate character. Many minerals are known to exist in the mountains, but are not extensively worked. There are extensive forests. The chief exports are cacao, ivory nuts, Panama hats, rubber, coffee, hides, and fruits.

The government is a centralized republic; the capital is Quito. There are sixteen provinces—viz.:

	Capital.
Azuay	Cuenca
Bolivar	Guaranda
Canar	Azogues
Carchi	Tulcan
Chimborazo	Riobamba
Esmeraldas	Esmeraldas
Guayas	Guayaquil
Imbabura	Ibarra
Leon	Latacunga
Loja	Loja
Manabi	Portoviejo
Oriente	Ahuano
El Oro	Machala
Los Rios	Babahoyo
Tunguragua	Ambato
Pichincha	Quito

Territory of the Galapagos Islands.

The constitution was adopted in 1897. It provides for a senate and chamber of deputies. Senators, two for each province, are elected for four years; deputies for two years, one for every 30,000 inhabitants.

The president, Eloy Alfaro, began his four years' term of office, Jan. 1, 1907. The cabinet is composed of five ministers.

The gold *sucre* is worth $0.487 United States gold.

Great Britain, United States, and Germany supply most of the imports, while France, United States, Germany, and Great Britain take most of the exports.

GUATEMALA

(*Republica de Guatemala*)

Alvarado, a lieutenant of Cortez, conquered the natives of this region in 1524. The name at one time implied all of Central America as well as the present Mexican states of Yucatan and Chiapas. It later came under the viceroyalty of Mexico. Independence of Spain was attained in 1821, but for a few months it was attached to the Mexican Empire. Then the Central American Federation was formed, but was dissolved and the republic, as it is now, was formally proclaimed in 1847.

The Republic of Guatemala, most northern of the Central American group, touches Mexico, Salvador, Honduras, and British Honduras. The chief physical characteristics are a coast line on the Pacific Ocean and the Gulf of Honduras, and an interior mountain region elevated from 2,000 to 11,000 feet; on the former grow products of the tropics, on the latter almost all those of the temperate zone.

The government is of a unitary, republican form; there are twenty-one departments or provinces—viz.:

	Capital.
Guatemala	Guatemala
Alta Verapaz	Coban
Amatitlan	Amatitlan
Baja Verapaz	Salama
Chimaltenango	Chimaltenango
Escuintla	Escuintla
Huehuetenango	Huehuetenango
Izabal	Izabal
Jalapa	Jalapa
Jutiapa	Jutiapa
Peten	Flores
Quezaltenango	Quezaltenango
Quiche	Santa Cruz
Retalhuleu	Retalhuleu
Sacatepeque	Antigua
San Marcos	San Marcos
Santa Rosa	Cuajiniquilapa
Solola	Solola
Suchitepeque	Mazatenango
Totonicapam	Tontonicapam
Zacapa	Zacapa

The capital is Guatemala. The constitution was adopted in 1847. It provides for one chamber, the National Assembly, composed of deputies elected by direct vote for four years, one for every 20,000 inhabitants.

The president, Manuel Estrada Cabrera begins his second term of six years, March 15, 1911.

There is no vice president, but two *designados*, elected by direct vote, the same as the president, take his place when required. The cabinet consists of six secretaries.

The silver *peso* is worth $0.382 United States gold. Commercial transactions are conducted on a basis of the paper *peso*, worth only about $0.06 United States gold.

COMMERCE

Chief articles exported:	1909
Coffee	$8,816,274
Hides	308,685
Bananas	229,566
Sugar	153,061
Rubber	173,626
Woods	263,573
Cotton fabrics	1,389,756

Chief articles imported:	1909
Linen, etc.	$167,879
Silk	211,613
Woolens	178,836

Wheat flour, iron and steel manufactures, and other manufactured articles are also imported, but the figures are not available.

Agriculture, particularly coffee and bananas, is the great industry. Rubber is gathered and to some extent planted. Corn is grown sufficient for the wants of the people, and the timber resources of the country are attracting attention. Some local manufacturing is done, and cotton goods for home consumption are produced.

HAITI

(*Republique de Haïti*)

The republic forms the western part of the island of Santo Domingo or Haiti, called Hispaniola by Columbus when he discovered it in 1492. It was once so depopulated that negroes from Africa were introduced for labor. It gradually passed into French hands. The spirit of revolt was aroused in 1801. An empire, a kingdom, and a republic were established at times. The former association with the Dominican Republic was dissolved in 1844.

Haiti is a land of mountains and valleys, tropical in all respects. The principal products are those of the tropics—coffee, cacao, cotton, tobacco, and sugar. There is abundance of timber, and considerable mineral resources are awaiting development.

The government is of the unitary, republican form, with five departments or provinces—viz.:

	Capital.
North	Cape Haitien
Northwest	Port au Paix
Artibonite	Gonaives
South	Les Cayes
West	Port au Prince

The capital is Port au Prince.

The constitution was adopted in 1889. It provides for a senate and a chamber of representatives, forming the National Assembly. Senators, thirty-nine in all, are chosen indirectly for six years, being renewed by thirds every two years. Representatives are elected by the people for a term of three years, one for each *commune*, a subdivision of a department.

The president, Antoine F. C. Simon, elected by the National Assembly, began his seven years' term of office, Dec. 17, 1908. There is no vice president. The cabinet is composed of six secretaries.

The gold *gourde* is worth $0.965 United States gold; the *gourde* paper may be estimated at about $0.20 United States gold.

The chief articles exported are coffee, woods, cacao, and some cotton. Textiles, food-stuffs, and lard are the articles chiefly imported.

HONDURAS

(*Republica de Honduras*)

Columbus discovered this region in 1502 and founded Trujillo. Later, Cortez himself came to the country, and subjected it to Spanish rule. It revolted with the rest of Central America in 1821, and became completely independent in 1840.

The Republic of Honduras is touched by Nicaragua on the south, by Salvador and Guatemala on the west and north. It is mountainous throughout, but with abundant valleys, capable of supporting crops of both temperate and subtropical character, and on some of the elevated plateaus wheat grows. The forests are abundant. The exports are bananas, hard woods, coffee, rubber, and minerals, of which the numerous mines furnish a rich supply, although sparsely worked.

The government is of a unitary, republican form, with sixteen departments or provinces—viz.:

	Capital
Tegucigalpa	Tegucigalpa
Comayagua	Comayagua
Cortes	San Pedro Sula
Santa Barbara	Santa Barbara
Copan	Santa Rosa
Gracias	Gracias
Intibuca	La Esperanza
La Paz	La Paz
Valle	Nacaome
Choluteca	Choluteca
El Paraiso	Yuscaran
Olancho	Juticalpa
Colon	Trujillo
Yoro	Yoro
Atlantida	La Coiba.
Isles de la Bahia	Roatan

The capital is Tegucigalpa.

The constitution was adopted in 1894 and again in 1907. It provides for a unitary, republican form of government, having only one chamber, with members elected by direct vote for a term of four years.

The president, Miguel R. Davila, began his four years' term of office, Feb. 1, 1908. There is one vice president. The cabinet is composed of six members.

The *peso* silver has a value of $0.382 United States gold; the paper *peso* fluctuates somewhat below that value.

MEXICO

(*Estados Unidos Mexicanos*)

The coast of Mexico had been explored by the Spaniards from Cuba in 1517, and Cortez, landing in 1519 at Vera Cruz, conquered the country. This was called New Spain until its revolt in 1810. Final independence was acknowledged in 1836. A new census was taken in 1910.

The United Mexican States form a republic, situated between north latitude 32° 42′ and 14° 30′, and west longitude (Greenwich) 86° 46′ and 117° 7′. It touches the United States of North America, Guatemala, and British Honduras. The coast area is narrow, so that the greater portion of the country is an immense tableland, crossed by two mountain chains. In this interior grow the diversified products of the subtropical and temperate zones.

The government is a federal union of states of which there are twenty-seven, beside three territories, and a federal district, viz.:

STATES	*Capital.*
Aguascalientes	Aguascalientes
Campeche	Campeche
Chiapas	Tuxla-Gutierrez
Chihuahua	Chihuahua
Coahuila	Saltillo
Colima	Colima
Durango	Durango
Guanajuato	Guanajuato
Guerrero	Chilpancingo
Hidalgo	Pachuca
Jalisco	Guadalajara
Mexico	Toluca
Michoacan	Morelia
Morelos	Cuernavaca
Nuevo Leon	Monterrey
Oaxaca	Oaxaca
Puebla	Puebla
Queretero	Queretero
San Luis Potosi	San Luis Potosi
Sinaloa	Culiacan
Sonora	Hermosillo
Tabasco	San Juan
Tamaulipas	Ciudad Victoria
Tlaxcala	Tlaxcala
Veracruz	Jalapa
Yucatan	Merida
Zacatecas	Zacatecas

TERRITORIES	*Capital.*
Baja California	La Paz
Tepic	Tepic
Quintana Roo	Santa Cruz de Bravo

The City of Mexico is the capital.

The constitution was adopted in 1857, and was amended in 1904. It provides for a republican federal form of government. There are two branches to the Federal Congress, the senate, and chamber of deputies. Senators, two for each state and the federal district, are elected indirectly for a term of four years, one half being renewed every two years. Deputies are elected indirectly also, for two years, one for every 40,000 inhabitants.

The president, Porfirio Diaz, first elected in 1876, began his eighth term of six years, Nov. 30, 1910. There is one vice president. The cabinet is composed of eight secretaries.

The silver *peso* has a value by law of $0.498 United States gold.

COMMERCE

Chief articles exported:	
Mineral products	$72,136,413
Vegetable products	33,965,277
Animal products	6,969,673
Manufactures	1,273,940

Chief articles imported:	
Mineral substances	$22,294,229
Vegetable substances	14,683,290
Machinery	10,060,751
Textiles	7,952,336
Animals and substances	6,284,203
Paper	2,324,232
Vehicles and cars	2,156,646
Arms and explosives	1,266,550

Gold, silver, copper, and lead are the principal items in the mineral exports. Henequen is the principal vegetable product, followed by coffee, rubber, cabinet woods, beans and unmanufactured tobacco. Skins and hides are abundantly exported. The last six months of the calendar year 1909, showed a decided gain over the first six months. (See III, *History.*)

NICARAGUA

(*Republica de Nicaragua*)

Columbus landed on the coast south of Cape Gracia á Dios in 1502. Cordova visited the country and subdued it. Independence, in the Central American Federation, was declared in 1821, but in 1838 complete autonomy was asserted.

The Republic of Nicaragua lies between Costa Rica on the south, and Honduras on the north. Two mountain ranges cross the interior, but the land is not very high so that tropical products are most characteristic. The two great lakes, Nicaragua and Managua, are distinctive features.

The government is of the unitary, republican form; Managua is the capital, and there are thirteen departments, or provinces, as well as several minor districts, viz.:

PROVINCES

	Capital.
Managua	Managua
Leon	Leon
Granada	Granada
Masaya	Masaya
Chinandega	Chinandega
Matagalpa	Matagalpa
Carazo	Jinotepe
Nueva Segovia	Somoto
Jinotega	Jinotega
Rivas	Rivas
Esteli	Esteli
Jerez	Boaca
Zelaya	Bluefields

DISTRICTS.

Rio Grande	Barra de Rio Grande
Prinzapolka	Barra de Prinzapolka
Siquia	Rama

COMARCAS

	Capital.
San Juan del Norte	San Juan
Cabo Gracias á Dios	Gracias á Dios

The constitution was adopted in 1905. It provides for a National Assembly with one chamber, members being elected by popular vote for terms of six years, a part renewed every two years.

The president is elected by direct vote (compulsory) for a term of six years. There is no vice president, but there are three *designados*.

The cabinet consists of five ministers.

The silver *peso* has a value of $0.385 United States gold. The paper *peso* fluctuates between $0.15 and $0.20 United States gold.

The chief articles of export are coffee, gold, bananas, rubber, woods, and cattle. The chief articles of import are textiles, iron and steel manufactures, food products, chemicals, and oil.

PANAMA

(*Republica de Panama*)

Columbus in 1502 entered the harbor of Porto Bello and planted a colony there. Crossing the Isthmus, Balboa in 1513 discovered the Pacific Ocean. In 1718 the region became attached to the viceroyalty of New Granada, and was a state of the Republic of Colombia on its revolt. The independence of the Republic of Panama was declared in 1903.

From this Republic of Panama the United States acquired the land necessary for the construction of an interoceanic canal; this strip is called the Canal Zone. It is five miles wide on each side of the center line of the canal, which is fifty miles long, from Cristobal on the Atlantic terminus to Balboa on the Pacific terminus. Some of the commercial statistics of the Republic of Panama refer ultimately to imports into the Canal Zone, and are, therefore, dependent to a certain extent upon the activities there. (See XXIX, *Panama Canal.*)

The Republic of Panama forms the connecting link between North and South America, touching Costa Rica and Colombia. The mountain chain, running its entire length, sinks to a slight elevation of less than 1,000 feet on the Isthmus, but rises gradually at the south toward the border of Colombia. Gold has been mined in this region. The country is tropical, although on the Pacific Coast there is a strip extremely fertile and of an equable, mild climate well adapted for corn, cattle, and potatoes.

The government is centralized and the capital is Panama; there are seven provinces, viz.:

	Capital.
Panama	Panama
Colon	Colon
Cocle	Penonome
Los Santos	Los Santos
Veraguas	Santiago
Chiriqui	David
Bocas del Toro	Bocas del Toro

The constitution was adopted in 1904. It provides for a national assembly of one chamber of deputies, each member being elected by direct vote for a term of four years for 10,000 inhabitants.

The president, elected by popular vote for a four years' term, cannot succeed himself immediately. There is no vice president, but three *designados* are appointed by the assembly. The cabinet consists of five secretaries.

The *Balboa*, one half of which is called a *peso*, is worth exactly $1.00 United States gold. The *peso* and fractions thereof are coined in silver, there being no coin of the *Balboa* value.

The chief articles exported are bananas, rubber, cocoanuts, ivory, nuts, hides, and hard woods.

The chief articles imported are vegetables and animal products, textiles, mineral products, chemicals, paper, machinery, vehicles, arms, and explosives.

Agriculture is the principal industry, the cultivation of bananas being very highly developed. Sugar cane grows readily, and both soil and climate seem peculiarly well adapted to it. In some parts of the country cattle thrive and the cultivation of stock promises a profitable future.

PARAGUAY

(*Republica del Paraguay*)

Sebastian Cabot, in 1527, ascended the Parana and Paraguay rivers. A settlement at Asuncion was made by the Spanish in 1537. This region pertained to the viceroyalty of La Plata until the revolt from Spain in 1810, but independence of Argentina was declared in 1811, since which date the republic has been a distinct entity. The famous war under Pres. Lopez decimated the inhabitants and set the country back a generation.

The Republic of Paraguay lies between latitude 22° 4′ and 27° 30′ south, and 54° 32′ and 61° 20′ west longitude (Greenwich). It touches Brazil, Bolivia, and Argentina. There are no high mountains, but a series of hills with intervening valleys and an extensive river system make the climate healthy and the products subtropical. Forests of hard woods abound, fruits grow in quantities, and *yerba mate* (Paraguay tea) is a staple.

The government is centralized, the political divisions being departments. The capital of the republic is Asuncion.

The constitution, adopted in 1870, provides for a senate and a chamber of deputies, both elected by direct popular vote, senators for a term of six years, renewed by thirds every two years, deputies for a term of four years, one for every 6,000 inhabitants. The president and a vice president are chosen by electors for a term of four years. The cabinet is composed of five ministers.

The gold *peso* about equals that of Argentina; the paper *peso* is very depressed and can be estimated at only about $0.07 United States gold.

The chief imports are textiles and hardware. The chief exports are animal and vegetable products.

PERU

(*Republica del Peru*)

Pizarro reached this region in 1532 and within a short time he conquered the Empire of the Incas. Independence was formally declared in 1821, and in 1823 the first president was appointed.

The Republic of Peru is about 1,000 miles long with a coast line on the Pacific, and 700 miles wide, extending to the upper reaches of the River Amazon. It touches Chile, Bolivia, Ecuador, and Brazil. The chief physical characteristics are the tropical zone along the coast; the fertile and healthful mountain regions, rich in minerals, which are as yet the principal source of wealth, and the eastern slopes, not yet well developed but heavily wooded, capable of great agricultural productiveness.

The government is centralized, and the capital is Lima; there are nineteen departments and three provinces, viz.:

DEPARTMENTS

	Capital.
Amazonas	Chachapoyas
Ancachs	Hauras
Apurimac	Abancay
Arequipa	Arequipa
Ayacucho	Ayacucho
Cajamarca	Cajamarca
Cuzco	Cuzco
Huancavelica	Huancavelica
Huanuco	Huanuco
Ica	Ica
Junin	Cerro de Pasco
Lambayeque	Chiclayo
La Libertad	Trujileo
Loreto	Iquitos
Piura	Piura
Puno	Puno

	Capital.
San Martin	Moyobamba
Tacna	Tacna
Lima	Lima

PROVINCES

	Capital.
Provincia de Callao	Callao
Provincia Moquegua	Moquegua
Provincia Tumbes	Tumbes

The constitution was adopted in 1860. It provides for a national congress of two chambers. Both senators and deputies are elected by direct popular vote for a term of six years, one of the latter for every 30,000 inhabitants. Both chambers are renewed by thirds every two years.

The president and two vice presidents are elected by popular vote for a term of four years. The president, Agusto B. Leguia, began his four years' term of office Sept. 24, 1908. The cabinet consists of six ministers.

The gold *libra* is exactly equal to the British sovereign ($4.866); a *sol* is one tenth of a *libra*.

The chief articles exported are minerals (copper, silver, petroleum, coal, gold), rubber, sugar, cotton, guano, and hides.

The chief articles imported are coal, cotton goods, machinery, paper, lumber, and food stuffs.

SALVADOR

(*Republica del Salvador*)

Alvarado explored and conquered Salvador at the same time that Guatemala was invaded. It became part of the captain generalcy of Guatemala and was once attached to Mexico. It joined the Central American Federation, won independence from Spain thereby, and in 1841 became a separate republic.

The Republic of Salvador is the smallest of the twenty-one American republics; it has a coast line only on the Pacific Ocean, and touches Guatemala and Honduras. The interior is mountainous, but the valleys are fertile and productive. It is also the most thickly populated, the chief industry being agriculture, although some mining is done.

The government is of a unitary form, the political divisions being fourteen departments or provinces, viz.:

	Capital.
San Salvador	San Salvador
La Libertad	Santa Tecla
Sonsonate	Sonsonate
Ahuachapan	Ahuachapan
Santa Ana	Santa Ana
Chalatenango	Chalatenango
Cuscatlan	Cojutepeque
Cabañas	Sensuntepeque
San Vicente	San Vicente
La Paz	Zacatecoluca
Usulutan	Usulutan
San Miguel	San Miguel
Morazan	San Francisco
La Union	La Union

The capital is San Salvador.

The constitution was adopted in 1886. It provides for one chamber, the National Assembly of Deputies, three deputies being elected from each department by direct popular vote for a term of one year. Voting is obligatory. President and vice president are elected by popular vote for a term of four years. The cabinet consists of four ministers.

The president, Fernando Figueroa, began his four years' term of office March 1, 1907.

The silver *peso* is worth $0.382 United States gold; its value fluctuates somewhat below $0.35 United States gold.

The chief articles exported are coffee, gold and silver, indigo, sugar, balsam, and tobacco. The chief articles imported are textiles, flour, hardware, drugs, boots and shoes, machinery, and various manufactured goods.

URUGUAY

(*Republica Oriental del Uruguay*)

Solis discovered this region when he entered the La Plata in 1508 and 1515. The country was claimed by both Spain and Portugal, but was finally ceded to Spain. The struggle for independence began with that of Argentina in 1810, and in 1828 the republic was acknowledged.

The Oriental Republic of Uruguay touches Brazil and Argentina, lying east of the latter across the Rio de la Plata. The country consists of long rolling plains broken by low mountains and well watered by numerous streams. It is naturally adapted for agricultural and pastoral life, as its products bear witness; there are also mines of value, and its forests offer hard woods for lumber.

The government is of the unitary

form; there are nineteen departments or provinces—viz.:

	Capital.
Artigas	San Eugenio
Canelones	Guadelupe
Cerro-Largo	Melo
Durazno	Durazno
Flores	Trinidad
Florida	Florida
La Colonia	Colonia
Maldonado	Maldonado
Minas	Minas
Paysandu	Paysandu
Rio Negro	Fray Bentos
Rivera	Rivera
Rocha	Rocha
Salto	Salto
San Jose	San Jose
Soriano	Mercedes
Tacuarembo	San Fructuoso
Treintatres	Treintatres
Montevideo	Montevideo

The capital is Montevideo.

The constitution was adopted in 1830 (slightly modified since). It provides for a General Assembly, consisting of a senate and a house of representatives. Senators are elected indirectly, one for each department, for a term of six years, renewed by thirds every two years. Representatives are elected by direct popular vote, one for every 3,000 inhabitants, for a term of three years. The president is chosen by the General Assembly.

The president, Claudio Williman, began his four years' term of office March 1, 1907. The cabinet consists of six ministers.

The gold *peso* is worth $1.034 United States gold.

The chief articles of export are grains, meats, wool, and some minerals. The chief articles imported are textiles and machinery.

VENEZUELA

(*Estados Unidos de Venezuela*)

This north coast of South America was sighted by Columbus in 1498, but it was not really pacified until 1567. This was the richest portion of the Spanish Main. In 1810 began the revolution for independence, finally achieved in 1819, under Bolivar.

The United States of Venezuela touches Colombia, Brazil, and British Guiana. It has three distinct climatic zones, the tropic, the plateau, and the mountainous; in the interior are extensive plains—*llanos*—that are remarkably well adapted for cattle. Over most of the country corn, cotton, coffee, tobacco, and cacao can be cultivated. Rubber is gathered from the forests, which offer hard woods also. The mines are rich, and asphalt is one of the principal exports.

The republic is a federal union; there are twenty states, a federal district with the capital Caracas, and two territories.

STATES

	Capital.
Apure	San Fernando
Aragua	La Victoria
Anzodtegui	Barcelona
Bolívar	Ciudad Bolívar
Carabobo	Valencia
Cojedes	San Carlos
Falcon	Coro
Guarico	Calabozo
Lara	Barquisimeto
Monagas	Maturin
Merida	Merida
Miranda	Ocumare del Tuy
Nuena Esparta	La Asuncion
Portuguesa	Guanare
Sucre	Cumana
Tachira	San Cristobal
Trujillo	Trujillo
Yaracuy	San Felipe
Zamora	Barinas
Zulia	Maracaibo

TERRITORIES

	Capital.
Amazonas	San Fernando de Atabapo
Delta-Amacuro	Tucupita

The constitution was adopted in 1909. It provides for a congress composed of a senate and a chamber of deputies. Senators are elected, two for each state, by the state assembly, for a term of four years. Deputies are elected by direct vote for four years, apportioned to the states, one for every 35,000 inhabitants.

The president, Juan Vicente Gomez, began his four years' term of office April 27, 1910. The cabinet consists of seven ministers.

The *Bolivar* is the (gold) unit of value, and is worth $0.193 United States gold.

The chief articles exported are coffee, cacao, balata gum and rubber, hides, skins, cattle, and asphalt.

The chief articles imported are textiles (cotton goods), wheat flour, food stuffs, lard, and kerosene.

The country is largely agricultural, but cattle breeding and mining form a distinct part of the national industry.

XI. PUBLIC RESOURCES AND PUBLIC WORKS

CONSERVATION OF NATIONAL RESOURCES

The so-called "Conservation Movement" was organized by Pres. Roosevelt, who appointed, June 8, 1909, a National Conservation Commission, divided into four sections of water resources, forest resources, land resources, and mineral resources. This commission organized promptly, appointed various committees, and held its general conference in Washington on Dec. 10, 1908, with Hon. Gifford Pinchot as chairman. This conference prepared a report for the President, which the latter transmitted to Congress in a special message, Jan. 22, 1909.

A summary of our national resources, or inventory, as it was called by the commission, together with the drain upon these resources, was contained in this report, and is the basis of the general conservation movement as it exists to-day. This summary was as follows:

Minerals.—The mineral production of the United States for 1907 exceeded $2,000,000,000, and contributed sixty-five per cent of the total freight traffic of the country. The waste in the extraction and treatment of mineral products during the same year was equivalent to more than $300,000,000.

The production for 1907 included 395,000,000 tons of bituminous and 85,000,000 tons of anthracite coal, 166,000,000 barrels of petroleum, 52,000,000 tons of iron ore, 2,500,000 tons of phosphate rock, and 869,000,000 pounds of copper. The values of other mineral products during the same year included clay products, $162,000,000; stone, $71,000,000; cement, $56,000,000; natural gas, $53,000,000; gold, $90,000,000; silver, $37,000,000; lead, $39,000,000, and zinc, $26,000,000.

The available and easily accessible supplies of coal in the United States aggregate approximately 1,400,000,000,000 tons. At the present increasing rate of production this supply will be so depleted as to approach exhaustion before the middle of the next century.

The known supply of high-grade iron ores in the United States approximates 4,788,150,000 tons, which at the present increasing rate of consumption cannot be expected to last beyond the middle of the present century. In addition to this, there are assumed to be 75,116,070,000 tons of lower grade iron ores not available for use under existing conditions.

The supply of stone, clay, cement, lime, sand, and salt is ample, while the stock of the precious metals and of copper, lead, zinc, sulphur, asphalt, graphite, quicksilver, mica, and the rare metals cannot well be estimated, but is clearly exhaustible within one to three centuries unless unexpected deposits be found.

The known supply of petroleum is estimated at 15,000,000,000 to 20,000,000,000 barrels, distributed through six separate fields having an aggregate area of 8,900 square miles. The production is rapidly increasing, while the wastes and the loss through misuse are enormous. The supply cannot be expected to last beyond the middle of the present century.

The known natural gas fields aggregate an area of 9,000 square miles, distributed through twenty-two states. Of the total yield from these fields during 1907, 400,000,000,000 cubic feet, valued at $62,000,000, were utilized, while an equal quantity was allowed to escape into the air. The daily waste of natural gas—the most perfect known fuel—is over 1,000,000,000 cubic feet, or enough to supply every city in the United States of over 100,000 population.

Phosphate rock, used for fertilizer, represents the slow accumulation of organic matter during past ages. In most countries it is scrupulously preserved; in this country it is extensively exported, and largely for this reason its production is increasing rapidly. The original supply cannot long withstand the increasing demand.

The consumption of nearly all our mineral products is increasing far more rapidly than our population. In many cases the waste is increasing more rapidly than the number of our people. In 1776 but a few dozen pounds of iron were in use by the average family; now our annual consumption of high-grade ore is over 1,200 pounds per capita. In 1812 no coal was used; now the consumption is over five tons and the waste nearly three tons per capita.

While the production of coal is increasing enormously, the waste and loss in mining are diminishing. At the beginning of our mineral development the coal abandoned in the mine was two or three times the amount taken out and used. Now the mine waste averages little more than half the amount saved. The chief waste is in imperfect combustion in furnaces and fire boxes. Steam engines utilize on the average about eight per cent of the thermal energy of the coal. Internal-combustion engines utilize less than twenty per cent, and in electric lighting far less than one per cent of the thermal energy is rendered available.

With increasing industries new mineral resources become available from time to time. Some lignites and other low-grade coals are readily gasified and, through the development of internal-combustion engines may be made to check the consumption of high-grade coals.

Peat is becoming important; it is estimated that 14,000,000,000 tons are available in the United States. Its value is enhanced because of distribution through states generally remote from the fields of coal, oil, and natural gas.

The uses of all our mineral resources are interdependent. This is especially true of coal and iron, of which neither can be produced or used without aid from the other, and in the production or reduction of all other minerals both coal and iron are employed. The same standard minerals are necessary to the development of power, of which the use is increasing more rapidly than that of any other commodity.

The building operations of the country now aggregate about $1,000,000,000 per year. The direct and indirect losses from fire in the United States during 1907 approximated $450,000,000, or one half the cost of construction. Of this loss four fifths, or an average of $1,000,000 per day, could be prevented, as shown by comparison with the standards of construction and fire losses in the larger European countries.

Lands.—The total land area of continental United States is 1,920,000,000 acres. Of this but little more than two fifths is in farms, and less than one half of the farm area is improved and made a source of crop production. We have 6,000,000 farms; they average 146 acres each. The value of the farms is nearly one fourth the wealth of the United States. There are more than 300,000,000 acres of public grazing land. The number of persons engaged in agricultural pursuits is more than 10,000,000.

We grow one fifth of the world's wheat crop, three fifths of its cotton crop, and four fifths of its corn crop. We plant nearly 50,000,000 acres of wheat annually, with an average yield of about fourteen bushels per acre; 100,000,000 acres of corn, yielding an average of twenty-five bushels per acre; and 30,000,000 acres of cotton, yielding about 12,000,000 bales.

We had on Jan. 1, 1908, 71,000,000 cattle, worth $1,250,000,000; 54,000,000 sheep, worth $211,000,000; and 56,000,000 swine, worth $339,000,000. The census of 1900 showed $137,000,000 worth of poultry in this country, which produced in 1899, 293,000,000 dozen eggs.

There has been a slight increase in the average yield of our great staple farm products, but neither the increase in acreage nor the yield per acre has kept pace with our increase in population. Within a century we shall probably have to feed three times as many people as now; and the main bulk of our food supply must be grown on our own soil.

The area of cultivated land may possibly be doubled. In addition to the land awaiting the plow, 75,000,000 acres of swamp land can be reclaimed, 40,000,000 acres of desert land irrigated, and millions of acres of brush and wooded land cleared. Our population will increase continuously, but there is a definite limit to the increase of our cultivated acreage. Hence we must greatly increase the yield per acre. The average yield of wheat in the United States is less than fourteen bushels per acre, in Germany twenty-eight bushels, and in England thirty-two bushels. We get thirty bushels of oats per acre, England nearly forty-five, and Germany more than forty-seven. Our soils are fertile, but our mode of farming neither conserves the soil nor secures full crop returns. Soil fertility need not be diminished, but may be increased. The large yields now obtained from farms in Europe which have been cultivated for a thousand years prove this conclusively. Proper management will double our average yield per acre. The United States can grow the farm products needed by a population more than three times as great as our country now contains.

The greatest unnecessary loss of our

soil is preventable erosion. Second only to this is the waste, nonuse, and misuse of fertilizer derived from animals and men.

The losses to farm products due to injurious mammals is estimated at $130,000,000 annually; the loss through plant diseases reaches several hundred million dollars; and the loss through insects is reckoned at $659,000,000. The damage by birds is balanced by their beneficent work in destroying noxious insects. Losses due to the elements are large, but no estimate has been made of them. Losses to live stock from these causes are diminishing because of protection and feeding during winter. The annual losses from disease among domestic animals are: Horses, 1.8 per cent; cattle, 2 per cent; sheep, 2.2 per cent, and swine, 5.1 per cent. Most of these farm losses are preventable.

There is a tendency toward consolidation of farm lands. The estimated area of abandoned farms is 16,000 square miles, or about three per cent of the improved land. The causes of abandonment differ in different parts of the country. Where most prevalent, it is caused principally by erosion and exhaustion of the soil.

The product of the fisheries of the United States has an annual value of $57,000,000. Fish culture is carried on by the nation and the states on an enormous scale. Most of the more important food species are propagated, and several species are maintained in that way. Fish from forest waters furnish $21,000,000 worth of food yearly, a supply dependent on the preservation of the forests.

Our wild game and fur-bearing animals have been largely exterminated. To prevent their complete extinction the states and the United States have taken in hand their protection, and their numbers are now increasing. Forest game yields over $10,000,000 worth of food each year.

With game birds the story is much the same—wanton destruction until the number has been greatly reduced, followed in recent years by wise protection, which in some cases allows the remnant to survive and even to increase.

Each citizen of the United States owns an equal undivided interest in about 387,000,000 acres of public lands, exclusive of Alaska and the insular possessions. Besides this there are about 235,000,000 acres of national forests, national parks, and other lands devoted to public use.

Good business sense demands that a definite land policy be formulated. The National Conservation Commission believes that the following will serve as a basis therefor:

1. Every part of the public lands should be devoted to the use which will best subserve the interests of the whole people.

2. The classification of all public lands is necessary for their administration in the interests of the people.

3. The timber, the minerals, and the surface of the public lands should be disposed of separately.

4. Public lands more valuable for conserving water supply, timber, and natural beauties or wonders than for agriculture should be held for the use of the people from all except mineral entry.

5. Title to the surface of the remaining nonmineral public lands should be granted only to actual home makers.

6. Pending the transfer of title to the remaining public lands they should be administered by the government and their use should be allowed in a way to prevent or control waste and monopoly.

The present public-land laws as a whole do not subserve the best interests of the nation. They should be modified so far as may be required to bring them into conformity with the foregoing outline of policy.

Forests.—Next to our need of food and water comes our need of timber.

Our industries which subsist wholly or mainly upon wood pay the wages of more than 1,500,000 men and women.

Forests not only grow timber, but they hold the soil and they conserve the streams. They abate the wind and give protection from excessive heat and cold. Woodlands make for the fiber, health, and happiness of the citizen and the nation.

Our forests now cover 550,000,000 acres, or about one fourth of the United States. The original forests covered not less than 850,000,000 acres.

Forests publicly owned contain one fifth of all our standing timber. Forests privately owned contain four fifths of the standing timber. The timber privately owned is not only four times that publicly owned, but is generally more valuable.

Forestry is now practiced on seventy per cent of the forests publicly owned and on less than one per cent of the forests privately owned, or on only eighteen per cent of the total area of forests.

The yearly growth of wood in our forests does not average more than twelve cubic feet per acre. This gives a total yearly growth of less than 7,000,000,000 cubic feet.

We have 200,000,000 acres of mature forests, in which yearly growth is balanced by decay; 250,000,000 acres partly cut over or burned over, but restocking naturally with enough young growth to produce a merchantable crop, and 100,000,000 acres cut over and burned over, upon which young growth is lacking or too scanty to make merchantable timber.

We take from our forests yearly, including waste in logging and in manufacture, 23,000,000,000 cubic feet of wood. We use each year 100,000,000 cords of firewood; 40,000,000,000 feet of lumber; more than 1,000,000,000 posts, poles, and fence rails; 118,000,000 hewn ties; 1,500,000,000 staves; over 133,000,000 sets of heading; nearly 500,000,000 barrel hoops; 3,000,000 cords of native pulp wood; 165,000,000 cubic feet of round mine timbers, and 1,250,000 cords of wood for distillation.

Since 1870 forest fires have destroyed a yearly average of fifty lives and $50,000,000 worth of timber. Not less than 50,000,000 acres of forest is burned over yearly. The young growth destroyed by fire is worth far more than the merchantable timber burned.

One fourth of the standing timber is lost in logging. The boxing of long leaf pine for turpentine has destroyed one fifth of the forests worked. The loss in the mill is from one third to two thirds of the timber sawed. The loss of mill product in seasoning and fitting for use is from one seventh to one fourth.

Of each 1,000 feet which stood in the forest, an average of only 320 feet of lumber is used.

We take from our forests each year, not counting the loss by fire, three and a half times their yearly growth. We take 40 cubic feet per acre for each 12 cubic feet grown; we take 260 cubic feet per capita, while Germany uses 37 and France 25 cubic feet.

We tax our forests under the general property tax, a method abandoned long ago by every other great nation. Present tax laws prevent reforestation of cut-over land and the perpetuation of existing forests by use.

Great damage is done to standing timber by injurious forest insects. Much of this damage can be prevented at small expense.

To protect our farms from wind and to reforest land best suited for forest growth will require tree planting on an area larger than Pennsylvania, Ohio, and West Virginia combined. Lands so far successfully planted make a total area smaller than Rhode Island; and year by year, through careless cutting and fires, we lower the capacity of existing forests to produce their like again, or else totally destroy them.

In spite of substitutes we shall always need much wood. So far our use of it has steadily increased. The condition of the world's supply of timber makes us already dependent upon what we produce. We send out of our country one and a half times as much timber as we bring in. Except for finishing woods, relatively small in amount, we must grow our own supply or go without. Until we pay for our lumber what it costs to grow it, as well as what it costs to log and saw, the price will continue to rise.

The preservation by use, under the methods of practical forestry, of all public forest lands, either in state or Federal ownership, is essential to the permanent public welfare. In many forest states the acquirement of additional forest lands as state forests is necessary to the best interests of the states themselves.

The conservation of our mountain forests, as in the Appalachian system, is a national necessity. These forests are required to aid in the regulation of streams used for navigation and other purposes. The conservation of these forests is impracticable through private enterprise alone, by any state alone, or by the Federal Government alone. Effective and immediate coöperation between these three agencies is essential. Federal ownership of limited protective areas upon important watersheds, effective state fire patrol, and the coöperation of private forest owners are all required.

The true remedy for unwise tax laws lies not in laxity in their application nor in special exemptions, but in a change in the method of taxation. An annual tax upon the land itself, exclusive of the value of the timber, and a tax upon the timber when cut, is well adapted to actual conditions of forest investment, and is practicable and certain. It is far better that forest land should pay a moderate tax permanently than that it should pay an excessive revenue temporarily and then cease to pay at all.

Forests in private ownership cannot be conserved unless they are protected from fire. We need good fire laws, well enforced. Fire control is impossible without an adequate force of men whose sole duty is fire patrol during the dangerous season.

The conservative use of the forest and of timber by American citizens will not be general until they learn how to practice forestry.

By reasonable thrift, we can produce a constant timber supply beyond our present need, and with it conserve the usefulness of our streams for irrigation, water supply, navigation, and power.

Under right management our forests will yield over four times as much as now. We can reduce waste in the woods and in the mill at least one third, with present as well as future profit. We can perpetuate the naval stores industry. Preservative treatment will reduce by one fifth the quantity of timber used in the water or in the ground. We can practically stop forest fires at a cost yearly of one fifth the value of the merchantable timber burned.

Waters.—The sole source of our fresh water is rainfall, including snow. From this source all running, standing, and ground waters are derived. The habitability of the country depends on these waters. Our mean annual rainfall is about thirty inches: the quantity about 215,000,000,000,000 cubic feet per year, equivalent to ten Mississippi rivers.

Of the total rainfall, over half is evaporated; about a third flows into the sea; the remaining sixth is either consumed or absorbed. These portions are sometimes called, respectively, the fly-off, the run-off, and the cut-off. They are partly interchangeable. About a third of the run-off, or a tenth of the entire rainfall, passes through the Mississippi. The run-off is increasing with deforestation and cultivation.

Of the 70,000,000,000,000 cubic feet annually flowing into the sea, less than 1 per cent is retained and utilized for municipal and community supply; less than 2 per cent (or some 10 per cent of that in the arid and semiarid regions) is used for irrigation; perhaps 5 per cent is used for navigation, and less than 5 per cent for power.

For municipal and community water supply there are protected catchment areas aggregating over 1,000,000 acres, and over $250,000,000 are invested in waterworks, with nearly as much more in the appurtenant catchment areas and other lands. The population so supplied approaches 10,000,000, and the annual consumption is about 37,500,000,000 cubic feet. The better managed systems protect the catchment areas by forests and grass; the water is controlled and the storm product used, but there is large waste after the water enters the mains.

For irrigation it is estimated that there are $200,000,000 invested in dams, ditches, reservoirs, and other works for the partial control of the waters, and that 1,500,000,000,000 cubic feet are annually diverted to irrigable lands, aggregating some 20,000 square miles. Except in some cases through forestry, few catchment areas are controlled, and few reservoirs are large enough to hold the storm waters. The waste in the public and private projects exceeds sixty per cent, while no more than twenty-five per cent of the water actually available for irrigation of the arid lands is restrained and diverted.

There are in continental United States 287 streams navigated for an aggregate of 26,226 miles, and as much more navigable if improved. There are also forty-five canals, aggregating 2,189 miles, besides numerous abandoned canals. Except through forestry in recent years, together with a few reservoirs and canal locks and movable dams, there has been little effort to control headwaters or catchment areas in the interests of navigation, and none of our rivers are navigated to more than a small fraction even of their effective low-water capacity.

The water power now in use is 5,250,000 horse-power; the amount running over government dams and not used is about 1,400,000 horse-power; the amount reasonably available equals or exceeds the entire mechanical power now in use, or enough to operate every mill, drive every spindle, propel every train and boat, and light every city, town, and village in the country. While the utilization of water power ranks among our most recent and most rapid industrial developments, little effort has been made to control catchment areas or storm waters in any large way for power, though most plants effect local control through reservoirs and other works. Nearly all the freshet and flood water runs to waste, and the low waters which limit the efficiency of power plants are increasing in frequency and duration with the increasing flood run-off.

The practical utility of streams for both navigation and power is measured by the effective low-water stage. The volume carried when the streams rise above this stage is largely wasted and often does serious damage. The direct yearly damage by floods since 1900 has increased steadily from $45,000,000 to over $238,000,000. The indirect loss through depreciation of property is great, while a large loss arises in impeded traffic through navigation and terminal transfers.

The freshets are attended by destructive soil erosion. The soil matter annually carried into lower rivers and harbors or into the sea is computed at 783,000,000 tons. Soil wash reduces by ten or twenty per cent the productivity of upland farms and increases channel cutting and bar building in the rivers. The annual loss to the farms alone is fully $500,000,000, and large losses follow the fouling of the waters and the diminished navigability of the streams.

Through imperfect control of the running waters lowlands are temporarily or permanently flooded. It is estimated that there are in mainland United States about 75,000,000 acres of overflow and swamp lands requiring drainage; that by systematic operation these can be drained at moderate expense, and that they would then be worth two or three times the present value and cost of drainage, and would furnish homes for 10,000,000 people.

It is estimated that the quantity of fresh water stored in lakes and ponds (including the American portion of the Great Lakes) is about 600,000,000,000,000 cubic feet, equivalent to three years' rainfall or eight years' run-off. Some 6,000,000 of our people draw their water supply from lakes.

A large part of that half of the annual rainfall not evaporated lodges temporarily in the soil and earth. It is estimated that the ground water to the depth of 100 feet averages 16⅔ per cent of the earth volume, or over 1,400,000,000,000,000 cubic feet, equivalent to seven years' rainfall or twenty years' run-off. This subsurface reservoir is the essential basis of agriculture and other industries and is the chief natural resource of the country. It sustains forests and all other crops and supplies the perennial springs and streams and wells used by four fifths of our population and nearly all our domestic animals. Its quantity is diminished by the increased run-off due to deforestation and injudicious farming.

Of the 35,000,000,000,000 cubic feet of cut-off, the chief share is utilized by natural processes or by agriculture and related industries. On an average the plant tissue of annual growths is three fourths and of perennial growths three eighths water; of human and stock food over eighty per cent is water, and in animal tissue the ratio is about the same; and since water is the medium for organic circulation, the plants and animals of the country yearly require an amount many times exceeding their aggregate volume.

It is now recognized by statesmen and experts that navigation is interdependent with other uses of the streams; that each stream is essentially a unit from its source to the sea; and that the benefits of a comprehensive system of waterway improvement will extend to all the people in the several sections and states of the country.

It is also recognized, through the unanimous declaration of the governors of the states and territories adopted in conference with the leading jurists and statesmen and experts of the country, that in the use of the natural resources the independent states are interdependent, and bound together by ties of mutual benefits, responsibilities, and duties.

It has recently been declared by a majority of our leading statesmen that it is an imperative duty to enter upon a systematic improvement, on a large and comprehensive plan, just to all portions of the country, of the waterways and harbors and Great Lakes, whose natural adaptability to the increasing traffic of the land is one of the greatest gifts of a benign Providence; while the minority indorsed the movement for control of the waterways still more specifically and in equally emphatic terms.

Within recent months it has been recognized and demanded by the people, through many thousand delegates from all states assembled in convention in different sections of the country, that the waterways should and must be improved promptly and effectively as a means of maintaining national prosperity.

The first requisite for waterway improvement is the control of the waters in such manner as to reduce floods and regulate the regimen of the navigable rivers. The second requisite is development of terminals and connections in such manner as to regulate commerce.

In considering the uses and benefits to be derived from the waters, the paramount use should be water supply; next should follow navigation in humid regions and irrigation in arid regions. The development of power on the navigable and source streams should be coördinated with the primary and secondary uses of the waters.

Broad plans should be adopted providing for a system of waterway improvement extending to all uses of the waters and benefits to be derived from their control, including the clarification of the water and abatement of floods for the benefit of navigation; the extension of irrigation; the development and application of power; the prevention of soil wash; the purification of streams for water supply; and the drainage and utilization of the waters of swamp and overflow lands.

To promote and perfect these plans scientific investigations, surveys, and measurements should be continued and extended, especially the more accurate determination of rainfall and evaporation, the investigation and measurement of ground water, the gauging of streams and determination of sediment, and topographic surveys of catchment areas and sites available for control of the waters for navigation and related purposes.

The Propaganda. — The significant events of the past year connected with the conservation movement may be grouped in three classes—viz., (1) those which relate to the propaganda, educational in character and devoted to the dissemination of information and the principles of conservation; (2) legislation both Federal and state, and (3) executive action in matters relating to the conservation of natural resources.

The National Conservation Association is a permanent organization having headquarters at Washington, D. C. Its purpose is to unite in one great national organization all those who desire to give their personal influence and support to the conservation movement. Its president is Hon. Gifford Pinchot, of Washington, D. C., late chief forester, who has done more than any other American to direct public attention to the waste of our natural resources, and has led the movement for organization to check this waste and to regulate the acquisition and use of the forests, water powers, and mineral lands. Thomas R. Shipp is secretary of the association, and its office is in the Colorado Building, Washington.

Nov. 1, 1909, the Southern Conservation Congress was called by Gov. Sanders, of Louisiana, meeting at New Orleans. The governors and conservation commissions of most of the southern states were in attendance. An important feature of the congress was a symposium on the subject "What is conservation doing in my State?" Representatives of fourteen southern states reported on the conservation work in their states.

April 4–5, 1910, the Western Forest and Conservation Association was in session at Spokane. The association is composed of representatives from a number of local societies in the northwestern states, its primary object being forest protection.

May 13, 1910, the General Federation of Woman's Clubs at the biennial meeting in Cincinnati devoted a session to conservation. Reports were made of the active work for conservation by the woman's clubs throughout the country.

Sept. 5–8, 1910, the second conservation congress held in St. Paul. was a notable and representative gathering of the friends of the conservation movement from all parts of the country. Important addresses were made by Pres. Taft and by ex-Pres. Roosevelt, which attracted wide attention. The question most vigorously debated was state control of natural resources, particularly water powers, *vs.* Federal control. The advocates of Federal control were successful in shaping the resolutions finally adopted. This congress marks a decided advance in determining definite and practical lines along which future action should proceed. The resolutions adopted at this congress cover the whole present program of the conservation movement, and are mainly as follows:

> Heartily accepting the spirit and intent of the Constitution and adhering to the principles laid down by Washington and Lincoln, we declare our conviction that we live under a government of the people, by the people, for the people, and we repudiate any and all special or local interests or platforms or policies in conflict with the inherent rights and sovereign will of our people.
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> Recognizing the natural resources of the country as the prime basis of property and opportunity, we hold the rights of the people in these resources to be natural and inherent, and justly inalienable and indefeasible; and we insist that the resources should and shall be developed, used and conserved in ways consistent both with current welfare and with the perpetuity of our people.
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> Recognizing the waters of the country as a great national resource, we approve and indorse the opinion of Theodore Roosevelt that all the waters belong to all the people, and hold that they should be administered in the interest of all the people.
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> Realizing that all parts of each drainage basin are related and interdependent we hold that each stream should be regarded and treated as a unit from its source to its mouth; and since the waters are essentially mobile and transitory and are generally interstate, we hold that in all cases of divided or doubtful jurisdiction the waters should be administered by coöperation between state and Federal agencies.
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> Recognizing the interdependence of the various uses of the waters of the country, we hold that the primary uses are for domestic supply and for agriculture through irrigation or otherwise, and that the uses for navigation and for power, in which water is not consumed, are secondary; and we commend the modern view, that each use of the

waters should be made with reference to all other uses for the public welfare, in accordance with the principle of the greatest good to the greatest number for the longest time.

Viewing purity of water supply as essential to the public health and general welfare, we urge upon all municipal, state and Federal authorities and on individuals and corporations, requisite action toward purifying and preventing contamination of the waters.

Approving the successful efforts of the United States to provide homes on arid lands through irrigation, we indorse and commend the reclamation service and urge its continuance and the extension of the same policy to the drainage of swamp and overflow lands, to be carried forward as far as appropriate through coöperation between states and Federal agencies. Viewing adequate and economical transportation facilities as among the means of conservation, and realizing that the growth of the country has exceeded the development of transportation facilities we approve the prompt adoption of a comprehensive plan for developing navigation throughout the rivers and lakes of the United States, proceeding in the order of their magnitude and commercial importance.

Recognizing the vast economic benefit to the people of water power derived largely from interstate and source streams no less than from navigable rivers, we favor Federal control of water power development; we deny the right of states or Federal Government to continue alienating or conveying water by granting franchises for the use thereof in perpetuity, and we demand that the use of water rights be permitted only for limited periods with just compensation in the interests of the people.

We demand the maintenance of a Federal commission empowered to deal with all uses of the waters, and to coordinate these uses for the public welfare in coöperation with similar commissions or other agencies maintained by the states.

Approving the withdrawal of public lands pending classification and the separation of surface rights from mineral forests, and water rights, including water-power sites, we recommend legislation for the classification and leasing for grazing purposes on unreserved public lands suitable chiefly for this purpose, subject to the rights of homesteaders and settlers, or the acquisition thereof under the land laws of the United States, and we hold that arid and nonirrigable public grazing lands should be administered by the government in the interest of small stock men and home seekers, until they have passed into the possession of actual settlers.

We hold that the deposits of important minerals underlying public lands. particularly mineral fuels, iron ores, and phosphate deposits, should be leased for limited periods not exceeding fifty years, but subject to renewal, the royalty to be adjusted at more frequent intervals, such leases to be in amounts to such regulations as to prevent monopoly and unnecessary waste.

We hold that phosphate deposits underlying the public lands should be safeguarded for the American people by appropriate legislation and we recommend the early opening of the Alaskan and other coal fields belonging to the people of the United States for commercial purposes on a system of leasing, national ownership to be retained.

We urge immediate investigation by the Federal Government of the damage done by the smelting of copper ores and the feasibility of so improving methods, as to utilize the injurious by-products in connection with phosphatic fertilizers.

We favor coöperative action on the part of states and the Federal Government looking to the preservation and better utilization of the soils by approved scientific methods.

We approve of the continuance of the control of the national forests by the Federal Government, and approve the policy of restoring to settlement such public lands as are more valuable for agriculture.

We earnestly recommend that the states and Federal Government acquire for reforestation lands not more valuable for other purposes, and that all existing forests publicly and privately owned be carefully protected by state and Federal Government. We recognize the invaluable services of the Forest Service to the people and earnestly recommend that it be more generously supported by the Federal Government, and that state, Federal and private fire patrol be more generously provided for the preservation of forests and human life; and appreciate and approve of the continuance of the services of the United States army in fire control in emergencies.

We favor the repeal of the timber and stone law.

We indorse the proposition for the preservation by the Federal Government of the Southern Appalachian and White Mountain forests.

We recommend that the Federal Government conserve migratory birds and wild game animals.

We recommend that the public and private schools instruct the youth of the land in the fundamental doctrines of conservation.

We realize that the fullest enjoyment of our natural resources depends upon the life and development of the people physically, intellectually, and morally and in order to promote this purpose, we recommend that the training and protection of the people and whatever pertains to the health and general efficiency be encouraged by methods and legislation suitable to this end. Child labor should be prevented and child life protected and developed.

Realizing the waste of life in transportation and mining operations, we recommend legislation increasing the use of proper safeguards for the conservation of life. And we also recommend that in order to make better provision for procuring the health of the nation a department of public health be established by the National Government..

We recommend the adequate maintenance of a national conservation commission to investigate the natural resources of the country and coöperate with the work of the state conservation commissions; and we urge the legal establishment and maintenance of conservation commissions or corresponding agencies on the part of all states of the Union.

Nothing in these resolutions to be construed as questioning the rights of the states or the people of the United States guaranteed under the Federal Constitution.

Sept. 26–30, 1910, the American Mining Congress, holding its annual convention at Los Angeles, devoted a number of sessions to the consideration of questions relating to the conservation of mineral resources, the disposal of public lands, etc.

Oct. 7–8, 1910, the second Southern Conservation Congress was held in Atlanta under the auspices of the Atlanta Chamber of Commerce. It was attended by representatives from all the southern states and afforded an indication of the active interest which the South is taking in conservation along practical, constructive lines. A notable address was delivered by ex-Pres. Roosevelt.

Legislation.—The President transmitted to Congress, Jan. 14, 1910, a special message on the subject of conservation. The administration program was embodied in a series of bills introduced in the Senate in Jan. by Sen. Nelson. The more important of these measures were the following:

Senate Bill 5486. Providing for the examination, reservation, and classification of public lands more valuable for the development of water powers than for other uses and providing for the leasing of such water-power privileges.

Senate Bill 5487. Providing for the reservation of coal in public lands and its disposal under a leasing system.

Senate Bill 5488. Providing for the reservation of phosphate, oil, asphaltum, and natural gas in public lands and its disposal under a leasing system.

Senate Bill 5489. Providing for the disposal of timber on public lands not included in the national forests or other reservations.

Senate Bill 5492. Providing for the forfeiture to the United States of unsurveyed land grants to railroads.

The legislation actually enacted by the first session of the sixty-first congress relating to conservation consisted of the following acts:

Public No. 87. Approved March 15, 1910. An act authorizing the Secretary of the Interior to make temporary withdrawals of public lands for certain purposes. This provides for the withdrawal from entry of lands designated by a state under the "Carey Act" pending investigation and survey preliminary to the filing of maps and application for segregation by the state.

Public No. 227. Approved June 22, 1910. An act to provide for agricultural entries on coal lands. This effects the separation of surface and mineral rights in case of lands classified as coal lands and their separate disposal.

Public No. 303. Approved June 25, 1910. An act to authorize the President of the United States to make withdrawals of public lands in certain cases. This provides for withdrawal of lands "for water-power sites, irrigation, classification of lands, or other public purposes."

The legality of all withdrawals, except of coal lands, has been seriously questioned, but this act removes all such question. Unfortunately it permits mineral entries on lands withdrawn for power sites without any consideration of relative worth, an omission which is likely to neutralize in large measure the beneficial effects of the law. (See XI, *Public Lands.*)

The most notable results in state legislation bearing on conservation have been attained in Louisiana. In a popular election an amendment to the constitution was adopted permitting the imposition of a license fee on all persons engaged in lumbering, mining, etc. As a result of recommendations made by two commissions appointed for the purpose, the legislature in its 1910 session passed thirty conservation laws. These cover the field of both animate and inanimate natural resources. By means of the license system funds are provided for making the laws effective.

Canada.—As a direct result of the conservation movement in the United States, the Canadian Parliament passed a law May 19, 1909, creating a commission of conservation for Canada. It consists of thirty-two members, including the minister of agriculture, the minister of the interior, the minister of mines, and the member of each of the nine provincial governments of Canada who is charged with the administration of the natural resources of the province, and twenty other members appointed by the governor in council. Its first meeting was held in Ottawa, Jan. 11–18, 1910.

Executive Action.—Under the act of June 25, 1910, the President has made the following withdrawals:

	Acres.
For water-power sites	1,451,809
For classification and appraisal of coal lands	82,931,864
For classification and in aid of legislation affecting the use and disposition of petroleum lands	4,654,890
For classification and in aid of legislation affecting the use and disposition of phosphate lands	2,514,195

PUBLIC LANDS

Morris Bien

Total Area.—The total area of the lands now or heretofore subject to the public land laws, including Alaska, is in round numbers 1,835,000,000 acres, of which there had been surveyed prior to June 30, 1909, 1,166,133,997 acres, leaving unsurveyed 643,405,843 acres.

Of this unsurveyed area a considerable portion is rugged and mountainous, the survey and subdivision of which may not be necessary for many years. The areas remaining unappropriated June 30, 1910, as estimated, are given in the following table in acres:

Alabama	108,210
Alaska	368,014,735
Arizona	41,491,369
Arkansas	512,705
California	24,864,884
Colorado	21,726,192
Florida	453,009
Idaho	24,743,804
Kansas	137,180
Louisiana	88,911
Michigan	107,890
Minnesota	1,563,302
Mississippi	47,058
Missouri	2,510
Montana	36,015,943
Nebraska	1,879,486
Nevada	56,474,688
New Mexico	36,454,692
North Dakota	1,410,225
Oklahoma	5,007
Oregon	17,580,573
South Dakota	4,562,804
Utah	35,955,554
Washington	3,196,059
Wisconsin	14,460
Wyoming	34,575,159
Total	711,986,409

The areas disposed of under the several laws for the disposition of public lands can be given only down to the year June 30, 1904, based on data prepared by a commission on the public lands appointed by President Roosevelt, Oct. 22, 1903, the extensive examination of the records necessary for that purpose not having been made since then. The following is compiled from the report of that commission published in Senate Document, No. 189, Fifty-eighth Congress, Third Session (1905):

DISPOSITION OF THE PUBLIC LANDS

	Acres.
Private land claims, donations, etc	33,400,000
Wagon-road, canal and river improvement grants	9,700,000
Railroad grants	117,600,000
Swamp land grants	65,700,000
School grants to States	69,000,000
Other grants to States	21,600,000
Military and naval land warrants	61,000,000
Scrip issued for various purposes	9,300,000
Allotments to individual Indians	15,100,000
Mineral lands	1,700,000
Homestead entries	96,500,000
Timber culture entries	9,700,000
Timber and stone entries	7,600,000
Cash entries, including entries under the preëmption desert and other acts	276,600,000
Rights of way	300,000
Forest reserves	57,900,000
Reserved for public purposes	6,700,000
Indian reservations	73,000,000
Entries pending	39,500,000
Unappropriated public land	837,639,840
Total (including Alaska)	1,809,539,840

The area disposed of in the five years since June 30, 1904, for which statistics are available is about 106,000,000 acres.

During the last session of Congress no material change was made in the fundamental laws, but several acts were passed which involve broad principles of public policy, and which will determine the trend of future utilization of the public lands.

Principal among these are the laws intended to provide for the conservation of the natural resources of the country. During the administration of President Roosevelt considerable areas of the public lands were withdrawn from entry or disposition under the public land laws in order to prevent the acquisition of lands valuable for coal, oil, or other minerals, or for power sites.

Doubts having been expressed regarding the authority of the executive branch of the government to so withdraw lands, Congress, by the act of June 25, 1910, provided that the President may, at any time in his discretion, temporarily withdraw from disposition any of the public lands of the United States, including the district of Alaska, and reserve the same for water-power sites, irrigation, classification of lands or other public purposes, such withdrawals or reservations to remain in force until revoked by him or by act of Congress.

Mineral Lands. — A further act tending to the same end was that passed on June 22, 1910, which permits the acquisition for agricultural purposes of lands classified as coal lands, or which are valuable for coal. Before this, an entry for agricultural purposes of lands known to be valuable for minerals was not authorized. This statute provides that in such cases the entryman acquires rights to the surface only, and shall have no interest whatever in the coal deposits, which shall remain subject to disposition by the United States. The right of access to the land for mining purposes is reserved, and any person acquiring the right to extract the coal must give a bond as security for the payment of any damages to the crops and improvements on the land.

Surveys.—Since the establishment of the present method of public land surveys in 1796, the work of surveying has usually been performed by deputy surveyors appointed by the surveyors general in the several States, and during practically all this time the work was done by contract.

There has been some fraud in these surveys and, moreover, the results on the whole have not been satisfactory, nor have they been economical. On several occasions special work has been done by other bureaus of the government, notably the geological survey, demonstrating the fact that the work could be done more efficiently and economically by competent surveyors employed directly by the government.

In the act making appropriations for sundry civil expenses of the government, June 25, 1910, the Secretary of the Interior is authorized to have the public land surveys made by competent surveyors selected by him. Steps have been taken to organize a competent corps of surveyors to carry on this work.

Indian Lands.—In 1909 and 1910 large areas of lands within Indian reservations were thrown open to the public. In the Flathead Indian Reservation, Mont., about 110,000 acres of agricultural land and 336,000 acres of grazing land were made available. In the Coeur d'Alene Indian Reservation, Idaho, about 200,000 acres were opened to entry, and in the Spokane Indian Reservation in the State of Washington, about 50,000 acres.

During the present year (1910) about 800,000 acres in the Crow Indian Reservation in Montana, and about 700,000 acres in the former Uintah Indian Reservation in Utah, will be sold at public auction. The minimum price on the Crow Reservation will be $2 per acre and on the Uintah Reservation fifty cents per acre. In the former case one fifth of the purchase price must be paid at the time of sale, and in the latter case the entire amount.

By the acts of May 30, 1910, and June 1, 1910, Congress authorized the sale and disposition of surplus and unallotted lands in the Rosebud Indian Reservation, S. D., and the

Fort Berthold Reservation, N. D. Considerable areas are thus made available to the public; but the time when the lands can be taken will depend upon the completion of the necessary preliminary work for the allotment of lands to the Indians, the appraisement of the surplus lands, the surveys and other necessary work, which may take several years.

New Mexico and Arizona.—By the act of June 20, 1910, provision was made for the admission of New Mexico and Arizona to statehood. Following the usual practice grants of land were made to each of the states amounting to about 10,950,000 acres for New Mexico and 10,450,000 acres for Arizona. Of this the grant for the support of common schools is about 8,600,000 acres to New Mexico and 8,100,000 acres to Arizona. This school grant covers four sections in each township, namely, Sections 2, 16, 32, and 36, or approximately one ninth the area of the proposed states. The remaining areas of 2,350,000 acres granted to each state are for university purposes, penitentiaries, insane asylums, and other public institutions.

Glacier Park.—Congress, by the act of May 11, 1910, added to the small group of national parks a new one named Glacier National Park in northern Montana adjoining the international boundary line. This comprises an area of over 1,500 square miles—981,681 acres, and includes a mountain area containing several glaciers and many features of interest deserving of care and preservation.

RECLAMATION AND IRRIGATION

ARTHUR P. DAVIS

The Carey Act.—The policy of disposing of the arid public lands under conditions requiring their reclamation by irrigation, was inaugurated by Congress, March 3, 1877, in the desert land act, which was made applicable to practically all the states and territories in which desert lands were found. Experience soon demonstrated, however, that the provisions of this act were not adapted to insure adequate reclamation of arid lands, except where this could be done by individual effort, or in small tracts.

Various efforts to repeal this law finally crystallized on Aug. 18, 1894, into what is known as the Carey Act, which provides for turning over to the desert land states, under certain restrictions, the public lands which they may irrigate or cause to be irrigated. Under this law and subsequent amendments considerable areas have been reclaimed in Idaho, and some in other states. The operations cover 157,034 patented acres in Idaho, 18,296 in Montana, 50,303 in Oregon, and 76,030 in Wyoming.

The Reclamation Act.—On June 17, 1902, President Roosevelt approved an act known as the Reclamation Act, which provided that the proceeds from the sale of public lands in the arid and semi-arid states should be used for the construction of irrigation works. Under this act the reclamation service was authorized to construct a number of large irrigation systems, the cost of construction to be repaid by the water users. Such repayments, together with the annual receipts from the sale of public lands, constitute a revolving fund to be used indefinitely in continuing this work.

The law contained a provision that the major portion of the funds arising in any given state should be expended for the benefit of lands lying within that state. As there were some receipts from the sale of public lands in every state, the effect of this provision was to require the inauguration of work in every state and territory in the arid region in which a reclamation project could be found. Thus, a large amount of work was undertaken which the available funds were inadequate to promptly complete.

This provision of the law was repealed by Congress, June 25, 1910, and by the same act Congress provided an appropriation of $20,000,000 for the completion of work under way in addition to the regular receipts available.

The preliminary stage of survey and examination for the selection of projects is now practically passed. The second stage of construction is well advanced, and large areas of land have been placed under irrigation. The third stage, that of settling the various projects with prosperous settlers, and collecting from them the cost of the works, has just been entered upon, and is making considerable progress.

In all, twenty-six projects have been approved by the Secretary of the Interior, and construction has commenced on twenty-five of these, several having been nearly completed. The following table shows the results of operations under the reclamation act:

SUMMARY OF RESULTS

June 30, 1902, to June 30, 1910

Material excavated, cubic yards		66,121,971
Class 1	57,842,078	
Class 2	4,308,489	
Class 3	3,971,404	
Volume of storage dams, cubic yards		5,632,157
Volume of dikes, cubic yards		3,104,738
Available reservoir capacity, acre-feet		4,484,500
Number of tunnels		68
Aggregate length of tunnels in feet		96,512
Canals carrying less than 50 second-feet, miles		3,874
Canals carrying from 50 to 300 second-feet, miles		790
Canals carrying from 300 to 800 second-feet, miles		356
Canals carrying more than 800 second-feet, miles		307
Canal structures costing less than $500		17,669
Canal structures costing from $500 to $2,000		728
Canal structures costing over $2,000		462
Number of bridges		1,487
Aggregate length of bridges in feet		35,561
Riprap, cubic yards		286,122
Paving, square yards		264,864
Cement used, barrels		1,133,878
Concrete, cubic yards		961,908
Roads, miles		460
Telephone lines, miles		1,319
Telephones in use, number		550
Buildings erected:		
Offices		54
Residences		182
Barns and storehouses		189
Area of lands irrigated, 1910		535,335
Under water-right applications, acres	239,468	
Under rental contracts, etc., acres	295,867	
Area of lands for which water can be supplied, acres		876,684
Acreage included in projects now under way		3,100,000

Arizona.—*Salt River Project, ninety per cent completed:* The Salt River Valley of southern Arizona is one where irrigation was practiced in ancient times and where, under Caucasian auspices, it has been carried on for over forty years. The extension of irrigation and the obtaining of an adequate water supply required the construction of a large reservoir which the reclamation service undertook in 1905.

This project involved the construction of a dam, known as the Roosevelt Dam, on Salt River just below the mouth of Tonto Creek, where it intercepts the drainage from nearly 6,000 square miles of territory. The total height of the dam from foundation to summit is about 280 feet. It is built of a gravity section on a radius of curvature of 400 feet, the body of the dam being of reinforced rubble masonry. This dam contains 326,000 cubic yards, and has just been completed. The reservoir has a capacity of 1,284,000 acre-feet, and an area of about 16,320 acres. Water power for the necessary operations in connection with the construction of the dam was developed at the dam site. This power will be later used in pumping water from underground in Salt River Valley, which is expected to add about 40,000 acres to the irrigated area.

The isolated location of the site made the importation of cement extremely expensive. To obviate this a cement mill was constructed at the site, operated by means of the water power developed and oil imported from California for use in the kilns. About 350,000 barrels of cement were manufactured at a large saving in the ultimate cost.

Shortly after beginning the work on the storage dam a great flood occurred in Salt River which destroyed the diversion dam upon which the valley had previously depended and which the irrigation company was unable to replace. This disaster led to negotiations with the Secretary of the Interior for the purchase of the works serving the farmers on the north side of Salt River, and the system was purchased and a permanent dam designed and constructed. This is called the Granite Reef Dam and is thirty-eight feet in height and 1,100 feet in length. It diverts water into large canals on the east side of the river from which all the irrigable lands in the valley are to be served. The enlargement, extension, and completion of the canal system was also undertaken and is now in progress.

Arizona-California.—*Yuma Project, eighty per cent completed:* This project provides for the diversion of the Colorado River by a dam about ten miles northeast of Yuma, Ariz. From this diversion dam a canal will be built on each side of the river to irrigate about 17,000 acres of land on the California side and 80,000 acres in Arizona. The dam has been completed and has a total length of 4,780 feet, a maximum width of 257 feet, and a maximum height of nineteen feet. It is built of loose rock dumped upon the sand of the river bed between concrete walls running parallel with the axis of the dam. The upper wall is founded on sheet piling designed to cut off the underflow. An efficient means of sluicing at the intake of the canal is provided by utilizing the fall secured by the dam. About 5,000 acres of land are under irrigation on the California side of the river, and work is in progress upon an inverted siphon to carry the main canal under the Colorado River to supply lands below Yuma.

California.—*Orland Project, seventy-seven per cent completed:* The East Park Dam, built on a branch of Stony Creek, stores water for about 14,000 acres of land in the vicinity of Orland, Cal. This storage dam is 139 feet high, has just been completed, and will store water for the next irrigation season. The capacity of the reservoir is 45,000 acre-feet. The canal system is approaching completion.

Colorado. — *Uncompahgre Valley Project, sixty per cent completed:* A tunnel 31,000 feet in length is now nearly completed to carry water from the Gunnison River into the Uncompahgre Valley, a portion of which has been under irrigation for many years. The provision of a larger and more reliable water supply will afford opportunity for large extension of irrigation, and a more complete supply for lands previously irrigated. The completion of this project involves the construction of a storage reservoir in Taylor Park on Taylor River, a tributary of the Gunnison, for the irrigation of 140,000 acres of land in the Uncompahgre Valley. There will also be opportunity for power development upon the canal system.

Idaho.—*Boisé Project, fifty per cent completed:* The Boisé Valley is another instance where old irrigation works existed with a water supply which failed in the latter part of the seasons, and where storage of water permitted large extensions of irrigation. A masonry diversion dam forty-five feet in height has been constructed at the mouth of the cañon nine miles above Boisé. This dam diverts water into a canal which will serve a large area of land, and in the non-irrigating season will conduct the water of the river to a reservoir which has been constructed on the plain at a site called Deer Flat. This reservoir involved the construction of two large dams, built of earth and gravel, one having a length of 4,000 feet and a height of seventy feet. The other has a length of 7,200 feet and a height of forty feet, each contains about 1,000,000 cubic yards. The reservoir will store 186,000 acre-feet of water. In its completed state this project will require a storage reservoir of about 200,000 acre-feet on the Boisé River. This will require a very high dam, for which borings and surveys are now in progress.

Minidoka Project, ninety per cent completed: The Minidoka Dam across Snake River is seventy-five feet in height, built of a combination of loose rock faced with a heavy bank of earth and paved with stone. From this diversion dam a canal is taken on each side of the river to irrigate lands in its valley. Irrigation enterprises farther down the same valley require the passage of a large amount of water around or through this dam, and this water is utilized for power. Four power units of a capacity of 1,800 horse-power each, have been installed, and the power transmitted as an electric current of 33,000 volts, a distance of thirteen miles, where three pumping stations raise the water to heights of thirty-one, sixty-two, and ninety-three feet, respectively, for serving lands too high for the gravity canals. About 50,000 acres are thus irrigated by pumping, and the total area of land now under ditch in this project is about 130,000 acres. This is already settled and nearly all cultivated in tracts of from forty to eighty acres.

Montana.—*Huntley Project, ninety-six per cent completed:* About thirteen miles below the site of Billings the Yellowstone River is diverted into a canal, having a capacity of about 500 second-feet, to irrigate lands along the Burlington and Northern Pacific railroads. East of Huntley, on the lower part of the canal where it became necessary to drop a large quantity of water to a lower level, the power of this falling water is utilized in a machine which is a combined water wheel and pump, to raise a portion of water to a higher level and cover an additional acreage of 3,000 acres. The Huntley project, when completed, will water 32,600 acres divided into farm units of from forty to eighty acres each. This project is one of the few which require neither storage reservoir nor diversion dam.

Milk River Project, twelve per cent completed: This project contemplates the diversion of St. Mary River, and will carry the water to the north fork of Milk River, where it will be discharged into that channel and carried across the line into Canada and back into the United States. The use of this channel has been provided for by treaty. The diversion will take place in the lower Milk River valley, and the diversion dam has already been completed for this purpose near Dodson, and canals are under construction. Storage will be provided at Nelson Reservoir and at St. Mary Lake. When completed the Milk River project will water 200,000 acres of land.

Sun River Project, seven per cent completed: A canal taking water from Sun River has been constructed a few miles above old Fort Shaw, and has been completed to cover 16,400 acres. This is known as the Fort Shaw unit of the Sun River project, and the complete project contemplates the storage of water on Willow Creek and on the north fork of Sun River. Other reservoirs and large canals are contemplated which will water over 300,000 acres of land.

Montana - North Dakota. — *Lower Yellowstone Project, ninety-five per cent completed:* A dam has been built across Yellowstone River, about twenty miles below Glendive, which diverts water into a canal on the north side of the river to serve about 67,000 acres of land, about two thirds of which is in Montana and one third in North Dakota. The dam has been completed and the canal is in operation, irrigation having been carried on for a portion of the lands during the past season.

Nebraska-Wyoming.—*North Platte Project, seventy-five per cent completed:* The second largest storage reservoir built by the reclamation service, called the Pathfinder, is formed by a dam 210 feet in height, built between granite bluffs on the North Platte River, fifty miles above the town of Casper. The dam is of granite masonry and is arched on a radius of 150 feet. A dike about 1,000 feet in length and forty feet in height has just been completed to close a gap on the south side of the reservoir near the main dam. The reservoir has a capacity of about 1,100,000 acre-feet.

A diversion dam, 600 feet long and 25 feet high, has been built across the North Platte River near the station of Whalen, from which the interstate canal carries the waters stored in the Pathfinder reservoir upon lands in Wyoming and Nebraska. This canal has been completed to a length of 100 miles, covering about 80,000 acres of land. Three reservoirs will be formed by dikes to be filled in the nonirrigating season through this canal and to serve lands farther down the valley. Work upon these reservoirs and the extension of the canal system is now in progress. The irrigable lands have all been settled and are yielding abundant crops.

Other enterprises are contemplated for irrigating other parts of the North Platte Valley from the waters stored in the Pathfinder reservoir.

Nevada.—*Truckee - Carson Project, sixty per cent completed:* A canal with a capacity of about 1,200 cubic feet per second has been constructed from the Truckee River near Derby station, and carries its water into the Carson Valley. These waters, together with the supply of the Carson River, are diverted to irrigate lands in the vicinity of the town of Fallon, Churchill County, Nev., and about 40,000 acres of land are now under cultivation. The complete project will cover over 200,000 acres. Storage will be provided in Lake Tahoe and Alkali Flat, and by the construction of a dam on the Carson River.

New Mexico - Texas.—*Rio Grande Project:* The complicated claims of Mexico and two rival valleys in the United States, regarding the diversion of the waters of the Rio Grande, were finally settled by a solution offered by the reclamation service for the construction of a large dam near the station of Engle on the Santa Fé system. This reservoir will have a capacity of about 2,500,000 acre-feet, and is designed to store waters from abundant years for use in years of shortage, and to control the entire available flow of the Rio Grande for the irrigation of about 180,000 acres of land. By treaty ratified in 1906, the Republic of Mexico is to receive an annual supply of 60,000 acre-feet of water in satisfaction of a large number of claims filed by Mexico for the damages caused by the diversion of the waters of the Rio Grande, to which lands in Mexico were alleged to be entitled by long prior use. The site for the reservoir has been acquired and preliminary work is in progress. A railroad is being built from the station of Engle to the dam site, a distance of about eleven miles. Three diversion dams are contemplated, one of which has been constructed near old Fort Seldon, which diverts the available waters of the Rio Grande into the old canal systems of the valley. This is a temporary arrangement, pending the completion of a storage reservoir.

North Dakota.—*Pumping Projects:* The government is utilizing the lignites which occur in abundance in North Dakota for pumping water from floating barges in the Missouri River for irrigating the bench lands in the vicinity of Williston and Trenton, N. Dak. About 2,400 acres were irrigated the past season in this way, and this area will be ultimately increased to perhaps 20,000 acres.

Oregon-California.—*Klamath Project, forty per cent completed:* The Klamath project is an interstate enterprise, involving the reclamation of lands in Oregon and California by the use of waters from Upper Klamath Lake and Lost River. About 30,000 acres are now under water. A storage dam has just been completed which forms a reservoir in Clear Lake, and other storage will be provided to irrigate ultimately about 100,000 acres of land.

South Dakota.—*Belle Fourche Project, eighty-three per cent completed:* A large earthen storage dam, more than 6,000 feet in length and containing 1,700,000 yards of earth, faced with a concrete pavement, is now nearing completion. The storage reservoir will have a capacity of 160,000 acre-feet. The reservoir is supplied by a large canal from the Belle Fourche River and will water 100,000 acres of land, about one half of which is now supplied with water from this project.

Utah.—*Strawberry Valley Project, forty-two per cent completed:* A tunnel is in course of construction which will have a length of about four miles and will carry water from the Strawberry River, a tributary of the great Colorado drainage, through the mountain into Spanish Fork Valley, for irrigation. A reservoir will be constructed at the inlet of the tunnel, and about 50,000 acres will eventually be served.

Washington. — *Okanogan Project, completed:* A dam of hydraulic fill construction, built of earth and rock, and a canal system, have just been completed near Conconully, Wash., which will store and deliver water for about 10,000 acres of high-grade fruit land in the vicinity of Okanogan and Riverside.

Yakima Project: Comprehensive plans are being carried out for the storage and utilization of the entire water supply of the Yakima Basin. To this end, water is being stored in Clealum, Kachess, and Keechelus lakes, and a dam is now under construction at Bumping Lake on the headwaters of the Naches River. A conduit ten miles in length is just completed, composed of tunnels and concrete flue on the mountain side, to carry the waters of Tieton River into Cowiche Valley, just west of the city of North Yakima. This system is nearing completion and about 20,000 acres will be supplied with water during the coming season. The Sunnyside Canal below Union Gap has been purchased, the dam and headworks rebuilt, and the canal is being enlarged. This unit will water about 100,000 acres, about one half of which is supplied at present. Future developments contemplate irrigation of a large area near Ellensburg, and another on the Indian reservation below Union Gap, and still another, called the Benton Unit, located near the junction of the Yakima and Columbia rivers.

Wyoming.—*Shoshone Project, fifty per cent completed:* On the Shoshone River, eight miles above Cody, Wyo., the reclamation service has just completed the highest dam in the world. It is 328 feet from lowest foundation to top of coping. It will store 456,000 acre-feet of water to supply lands in the lower valley, about 30,000 acres of which have been covered by canals and ditches, which are now being extended. The complete project will irrigate about 155,000 acres of excellent land. (See also XXIX, *Civil Engineering.*)

WATERWAYS

E. N. Johnston, U.S.A.

National Waterways Commission.—Congress by act of March 3, 1909, provided for the appointment of the United States National Waterways Commission. This commission was composed of seven members of the United States Senate and five members of the House of Representatives, with Hon. Theodore E. Burton as chairman. After making a thorough examination of various United States and European waterways, the commission submitted a preliminary report, Jan. 24, 1910. The commission found that there had been a decrease in water-borne traffic on the inland waterways of the United States, while traffic on the Great Lakes had increased enormously. It was the opinion of the commission that the decrease was largely due to the relations existing between the railroads and waterways, the railroads having advantages in wider areas of distribution, in terminal facilities, and in ease of transfer from one railroad to another when compared with transfer from boat to railroad, or *vice versa.* It was the opinion of the commission that the thing most essential for the rehabilitation of water traffic is the establishment of harmonious relations between railways and steamboat lines. The commission was further of the opinion that the only canals which are commercially advisable are those connecting navigable waters near each other, and between which a large traffic would naturally exist, such as between lakes Superior and Huron; comparatively short canals which save a great sailing distance, such as the Panama Canal; and short canals connecting large cities with the sea coast, such as the Manchester Canal in England.

It was recommended that improvements not essential to navigation should not be undertaken by the Federal Government; that participation in expense of improvement by localities should be encouraged; that improvement of rivers and harbors be not made unless proper assurance is given that terminal facilities will be furnished by the local authorities; and that the charges for the same will be reasonable. The commission advocated a continuance of the present system of investigation and recommendation by the corps of engineers of the army prior to commencing any work, and that a general policy be adopted of providing for the early completion of all projects already undertaken.

In regard to certain related subjects, the commission stated that it should always be borne in mind that improvements made by the Federal Government should be restricted to those necessary in the interest of navigation; the subjects of bank protection, flood protection, clarification of water, etc., except when necessary in the interest of navigation, being matters within state control. The commission recommended a division of harbors into classes by depths and importance of ocean traffic; that care be taken to avoid an undue multiplication of ports; and that they be rendered useful to the largest possible number by preventing a monopoly of benefits by a few.

River and Harbor Act.—The river and harbor act of June 25, 1910, appropriated $41,327,238.50, and authorized the Secretary of War to enter into contracts for not to exceed $10,618,605 additional. These funds were for use in prosecuting or maintaining 433 projects. In addition to these sums the sundry civil act, June 25, 1910, appropriated $8,186,738 for payment on contracts previously authorized. Provision was made for many important projects, including the canalization of the Ohio River; the canalization of the Cumberland River up to Nashville; improvement of the Mississippi River; the Hudson River in the vicinity of Troy, providing an entrance to the new barge canal of the State of New York; Savannah River from Augusta to the sea; 35-foot channel in the Delaware River from Philadelphia to the sea, 27-foot channel to Mobile, 30-foot channel to Jacksonville, 30-foot channel to Oakland, Cal., besides enlargements of the harbors of Ashtabula, Conneaut, and Lorain, on Lake Erie.

One of the important new features of this bill was the indication by Congress of its intention to provide funds hereafter for important improvements as fast as they can be economically expended. For example, it was directed that the canalization of the Ohio River be prosecuted with a view to its completion in twelve years, the improvement of the Mississippi from the mouth to Cairo in twenty years, etc. In approving this bill, Pres. Taft transmitted to Congress a message explaining that his approval was given because of the fact that it provided for the continuance of many important projects which should not be postponed. He stated, however, that the bill was defective in the large number of projects appropriated for, and the uneconomical manner in which some were provided for by appropriations small in comparison with the amount required to complete the work.

Works Completed During the Year.—The total amount expended on rivers and harbors during the year ending June 30, 1910, was $29,685,583. The 35-foot channel to Baltimore was completed during the year. The new Ambrose Channel entrance to New York harbor was completed to a 40-foot depth, with a least width of 1,000 feet. A 30-foot channel in the Delaware River to Philadelphia was practically completed during the year, the least depth before improvement having been about 17 feet. The entrance channel to Galveston was deepened during the year from 30 feet to 34 feet, the depth before improvement having been only 12 feet. Various locks and dams throughout the country were completed, including two locks on the Warrior River, Ala.; locks 13, 18, and 37, on the Ohio River, the first named and last named forming harbors for Wheeling and Cincinnati respectively; a lock on the Osage River, Mo.; a new lock on the Monongahela River; locks 6 and 7 on the Cumberland River, carrying slack water 125 miles above Nashville. Substantial progress was made on other works, including a large new lock in the St. Mary's River, at Sault Ste. Marie, Mich.; the jetty improvement of the southwest pass of the Mississippi River, the present and original depths over the bar being 29 feet and 10 feet respectively; jetty work at the mouth of the Columbia River, etc.

Future Work Planned.—The important work connected with the preparation of plans for future improvements included the survey and preparation of plans for an intracoastal waterway from Boston to the Rio Grande River. The report on this project has not yet been submitted to Congress, but substantial progress has been made. A survey of the Tennessee River was completed and substantial progress made on plans for its improvement from Knoxville to the mouth. Plans for the improvement of the Missouri River below Kansas City were also in course of preparation.

The act of June 25, 1910, provided for an examination and report upon a proposed waterway from Lockport, Ill., at the end of the Chicago Drainage Canal, to the Mississippi River at Cairo; the report to include a consideration of the feasibility of such a waterway and the most advisable depth and dimensions for it; also upon such measures as might be required to preserve the level of the Great Lakes, the effects of such a waterway upon flood heights in the Mississippi River below Cairo, and upon the climate of the lake states. The board, which was appointed by the Secretary of War in Sept., consists of four officers of the corps of engineers of the army and one civil engineer. A preliminary report, which was submitted to Congress in Dec., stated that, because of the late date at which the board had been appointed and the extent of the matters upon which it was required to report, its full report could not be submitted until later in the winter.

International Association.—During the year provision was made by Congress for the payment of expenses of a meeting of the International Association of Navigation Congresses, to be held in Philadelphia in 1912, and preliminary arrangements for the Congress were undertaken by the War Department.

Waterway Associations. — Various waterway associations held their regular annual meetings, including the Atlantic Deeper Waterways Association at Providence, R. I.; the Lakes-to-the-Gulf Deep Waterway Association at St. Louis, Mo.; the Ohio Valley Improvement Association at Cincinnati, Ohio; the Upper Mississippi River Improvement Association at St. Paul, Minn.; and the National Rivers and Harbors Congress at Washington, D. C. During the past five years or more, these associations have done much to influence public opinion in favor of waterway improvements—one of the first results being the appointment in 1907 by Pres. Roosevelt of the Inland Waterways Commission, composed of United States Senators and Representatives, officials of various Federal departments, etc. This commission was superseded in 1909 by the National Waterways Commission hereinbefore referred to.

THE PANAMA CANAL

The Panama Canal is to be a lock canal, capable of carrying the largest ships now afloat. and will be 50½ miles long. Entering from the Atlantic at Colon there is a 7-mile level to Gatun, where a series of three locks in flight carry it up to the 85-ft. level of Gatun Lake; on this level there is a distance of 24 miles in open lake and 9 miles in the famous Culebra Cut. At the end of the level the Pedro Miguel lock carries the canal down to a 54⅔-ft. level and 1⅓ miles farther on the two locks at Miraflores bring it down and into the Pacific at Panama through an 8½-mile channel. The main data on the canal brought down to Jan. 1, 1911, are as follows:

DATA ON THE PANAMA CANAL

Length from deep water to deep water.	50– miles.
Length on land.	40– miles.
Bottom width of channel, maximum.	1,000 ft.

Bottom width of channel, minimum, 9 miles, Culebra Cut	300 ft.
Locks, in pairs	12
Locks, usable length	1,000 ft.
Locks, usable width	110 ft.
Gatun Lake, area	164 sq.m.
Gatun Lake, channel depth	85 to 45 ft.
Excavation, estimated total	212,445,766 c. y.
Excavation, amount accomplished (Dec. 1, 1910)	124,305,958 c. y.
Excavation by the French	78,146,960 c. y.
Excavation by French, useful to present Canal	29,908,000 c. y.
Concrete, total estimated for Canal	5,000,000 c. y.
Time of transit through completed Canal	10 to 12 hrs.
Time of passage through locks	3 hrs.
Relocated Panama Railroad, estimated cost	$7,225,000
Relocated Panama Railroad, length	46.2 miles.
Canal Zone, area......about	448 sq. m.
Canal Zone area, owned by United States.......about	322 sq. m.
Canal force, actually at work..............about	39,000
Canal force, Americans, about	5,500
Cost of Canal, estimated total	$375,000,000
Work begun by Americans	May 4, 1904
Date of completion	Jan. 1, 1915

The annual report of Col. Goethals for the year ending June 30, 1910, makes the following statement regarding the cost of the canal and the expenditures to date:

> The appropriations made by Congress for the Isthmian Canal and available to the close of the fiscal year 1909, amounted to $210,146,468.58, or fifty-six per cent of the total estimated cost of the canal, which is fixed at $375,201,000. On June 25, 1910, $37,855,000 were appropriated for the fiscal year 1910–11, leaving $127,199,531.42 of the estimated total cost of the canal to be appropriated. The total classified expenditures for canal work to June 30, 1910, amounted to $191,258,113.93, of which $31,188,426.37 were the net expenditures during the fiscal year covered by this report. Of the total classified expenditures to June 30, 1910, $25,699,450.81 were for plant and equipment for construction work, of which $4,388,511.55 were expended during the fiscal year.

Labor.—Concerning the labor employed in the construction of the canal the report says:

> Laborers recruited during the year aggregated 2,519; all were West Indians, the larger part of them from Barbados. The last recruiting was done in Jan., 1910, since which date immigration has exceeded emigration, and, as the work has reached its maximum, the present population of the Zone furnishes an ample labor supply. There has always been an independent immigration from the West Indian islands, but it was not until within the last four months that there has been any such movement on the part of European laborers. During this period, however, 2,000 have come of their own volition from Spain and Italy. From the beginning of the fiscal year there was a steady increase in the force, until a maximum—38,676—was reached on March 30, 1910, including the staff of the Panama Railroad Company and the relocation staff.

Health Conditions.—The health conditions on the isthmus are reported by the chief sanitary officer as an improvement over those of the preceding year. The total admissions to hospitals and sick camps, including those sick in quarters, were for the year 26,539. The daily average of sick was 23.01 out of every thousand employed, as against 23.49 for the preceding year. The total number of deaths among employees was 548, equivalent to an average of 10.84 per thousand.

In addition to the number of deaths reported among the Americans, which aggregated 76, 39 were deported on the recommendation of the medical examining boards as physically unfitted for the tropics. No cases of plague or yellow fever originated on the isthmus.

Opening of the Canal.—Pres. Taft visited the Canal Zone in Nov., 1910, and spent five days in inspecting the work. He expressed himself as delighted with the rapid progress being made. During his visit it was informally announced that the canal will be completed on Dec. 1, 1913, thirteen months earlier than the official date of the opening, which remains Jan. 1, 1915. The additional year is desired by Col. Goethals to train the canal tenders and get the machinery in smooth working order. Ships will in the meanwhile have the privilege of the canal, but at their own risk. Col. Goethals explained to the President that the informal opening of the canal in 1913 would necessitate immediate action on the part of Congress relative to toll rates, because eighteen months will be required by shipping interests to adjust their rates to the new route.

PUBLIC SERVICE COMMISSIONS

Richard C. Harrison

The progress of the public service commission scheme of regulation of public utilities during the year 1910 was fairly satisfactory to its advocates. Two states adopted public service laws and in New York the already strong law was greatly improved on its administrative side and by the inclusion of important utilities not theretofore within its scope.

Federal.—In 1908 Congress, in response to pressure from believers in the necessity for the regulation of public utilities, placed the street railways of the District of Columbia under the supervision of the Interstate Commerce Commission so far as safe and adequate service was concerned (*Public Statutes*, 1908, chapter 190). In 1909 the same commission was intrusted with the duty of prescribing a uniform system of accounts for all gas and electric companies in the District (*Public Statutes*, 1909, chapter 245). The plan of burdening the already overworked commission with local matters was illogical and unwise, and in 1910 a bill was introduced "to confer upon the commissioners of the District of Columbia the powers of a public service commission" (H. R., 23,690). The bill was referred to the committee on the District of Columbia, where it remained till the close of the session. It failed to receive active support from the commissioners of the District themselves and met with much opposition from the various public service corporations affected.

New York. — In 1907 New York adopted a very strong regulative act creating two commissions, one with jurisdiction over utilities in the city of New York, and another covering the rest of the State. The statute applied to street and steam railroads, gas and electric companies, and to certain express and coach companies. The New York City commission was also given the powers of the former Board of Rapid Transit Railroad Commissioners in the matter of laying out rapid-transit routes for the city and supervising their construction. Telephone and telegraph companies were not included in the law, although, logically, they should have found a place in so comprehensive a scheme of public utility regulation. In 1909 Gov. Hughes strongly recommended the amendment of the law in this respect, but without success. A legislative committee was appointed, however, which investigated conditions during the summer of 1909, and as a result a bill was introduced in 1910 to effect the reform. It became a law on June 25, 1910, as chapter 673 of the laws of 1910. In view of the enormous volume of work imposed upon the New York City commission in the planning and construction of subways, the Legislature considered it wise to place all telegraph and telephone companies under the jurisdiction of the up-State commission. Just prior to the passage of the law certain Western Union Telegraph and Bell Telephone interests consolidated by the formation of the American Telephone and Telegraph Company with an authorized capital of $20,000,000. The law gives the commission the same broad powers of service and rate regulation and financial control over both classes of corporations as it had before exercised with reference to other utilities. An important amendment to the law was made, specifically granting to the commissions the power to compel street railways to establish through routes at a joint rate of fare divisible in proportions fixed by the commission.

New Jersey.—On March 24, 1910, Gov. Fort signed a law giving the State its first general Public Service Commissions Law. The statute provides for a commission of three. It covers all classes of public utilities. The commission has power to compel compliance with the statutes of the State, to make such regulations as will secure safe and adequate service and a discontinuance of rebates and unjust discriminations. It may also prescribe a uniform system of accounts. No power is given to fix rates. The commission may, however, hear complaints on the subject of rates and make such recommendations as seem necessary. Financial control is limited to seeing that securities are issued according to law —stock at par, and five per cent bonds at not less than 80, except that bonds issued under trust deeds executed prior to Aug. 14, 1906, may be sold at 70 until Feb. 13, 1911. The commission is allowed a total of $50,000 for expenses, of which $18,000 is to cover the salaries of the commissioners. It is distinctly a weak law with inadequate provisions for enforcement.

Maryland.—In strong contrast to the New Jersey act is the new Public Service Commissions Law of Maryland, passed April 5, 1910. The act is modeled closely upon the statutes of New York and Wisconsin, the two states which have gone farthest in this class of regulative legislation. A commission consisting of three members was created with initial terms of two, four, and six years with reappointments for a full six-year term. The chairman is to receive $6,000, and the other members $5,000, a year salary. All public service corporations, including common carriers, gas and electric companies, ferry companies, telegraph and telephone, heating and refrigerating and water companies are placed under the jurisdiction of the commission. The commission may fix rates and value plants. It may require the public posting of tariffs and prevent unjust discriminations. The familiar long and short haul provision of the interstate commerce act is included. The commission may prescribe a uniform system of accounting. It may order switch connections and the interchange of traffic. The financial regulation extends to the approval of stock and bonds and notes running for over a year. No franchise may be exercised or transferred without the consent of the commission. All statutes fixing charges to be made by public utility companies are repealed, including the act fixing the rate of gas for the city of Baltimore at $1.10 per thousand feet. A rather remarkable provision is included, making "a substantial compliance with the requirements of this act sufficient to give effect to all rules, orders, acts, and regulations of the commission, and they shall not be declared inoperative, illegal, or void for any omissions of a technical nature in respect thereto."

John Ambler, Philip A. Laird, and Joshua W. Hering were appointed commissioners, and $75,000 was appropriated for their expenses for the first year. Much should be accomplished if the law is ably administered.

Illinois.—A bill for the creation of a public service commission on the lines of the New York commissions was introduced into the Legislature in 1910, but failed of passage.

Maine.—The Legislature of 1910 considered a proposed public utilities law, but no favorable action was taken.

Missouri.—Missouri has no State utilities commission, the power to regulate rates having been delegated to local officials by law in 1907. On April 16, 1910, Gov. Hadley, in an address before the Missouri Electricity, Gas, Street Railway and Water Works Association advocated the passage of a State public service commissions law and declared that he would recommend it to the next Legislature. In 1909 such a law was considered. It passed the House, but was killed in the Senate.

Ohio. — A utilities bill was defeated during the legislative session of 1910.

South Carolina.—A proposed public service commissions law was introduced into the Legislature in 1910, but failed of passage.

Utah.—During the session of 1909 the Utah Legislature considered a public service commissions law, but did not adopt it.

Connecticut.—A utilities law was defeated in the legislative session of 1909.

CITY COMMISSIONS

Los Angeles.—Dec. 7, 1909, the city of Los Angeles created a public utilities board of three members to be known as the "Department of Public Utilities." Commissioners are appointed by the mayor, subject to confirmation by the city council, for a term of three years. The first commissioners were appointed for one, two, and three years, respectively. The board is charged with the duty of making a thorough investigation into the affairs of water, electric lighting, power, gas, telephone, street and interurban railways, and other public utilities, and to compile such data as may be necessary to determine reasonable rates for service. Plants are to be appraised. On or before March 1 of each year the board is to report to the city council recommending schedules of rates for the various classes of public utilities. The board is also to investigate service and rate complaints of citizens whenever, in its judgment, they are of sufficient importance to deserve attention, and generally are to supervise operation. Detailed indices of information as to franchises are to be prepared. New franchises are to be referred to the board and reported upon to the city council before the grants are made; $12,000 a year is appropriated to carry the ordinance into effect.

Kansas City.—The State of Missouri by laws in 1907 delegated to cities the power to fix rates for public utilities. Kansas City took advantage of the statute by the passage of an ordinance on May 19, 1908, creating a public utilities commission of seven members. It has duties in rate investigation and recommendation similar to those of the Los Angeles commission already described.

St. Louis.—By ordinance of Feb. 24, 1909, St. Louis created a commission of three members with practically the same powers and duties as the Kansas City commission.

PRACTICAL WORKING OF PUBLIC SERVICE COMMISSION LAWS

On the whole, regulation through public service commissions has proven a decided success. In New York important matters of stock and bond issues have been passed upon during 1910 with general satisfaction to the public. Naturally, such radical legislation has not had entirely smooth sailing. Several important decisions of the New York commission have been overturned by the courts through crudities in the law. It is exactly the experience which the interstate commerce law passed through in its early years. The publicity and uniform accounting features of the utility acts have the greatest promise of effective work. Service regulations are seldom entirely satisfactory owing to the difficulty of exercising sufficient supervision to be sure that the orders are obeyed. Rate making is usually fought desperately and often successfully in the courts.

The idea of public control has apparently come to stay. It is almost inconceivable that the people in states having strong commissions will ever consent to return to the old unsupervised domination by great public service corporations, or even that they will be willing to substitute for the present effective control the former nominal oversight in vogue for so many years.

For reference, the following is a list of states with and those without public service commissions at the close of the year 1910:

Public Service Commission States

New York.
Wisconsin.
Michigan.
Maryland.
New Jersey.
Vermont.
Massachusetts. (Not in name but the railroad board and the gas and electric light commission have many of the broad powers of public service commissions.)

Partial Control of Public Utilities

Maine.
Pennsylvania.
Ohio.
Virginia.
N. Carolina.
S. Carolina.
Tennessee.
Illinois.
Mississippi.
Louisiana.
Missouri.
Iowa.
Minnesota.
Nebraska.
Oklahoma.

The rest of the states have practically no effective state control by commissions.

Porto Rico.—On March 12, 1908, a public service commissions law passed by the legislative assembly was approved. The act applies to all public service corporations "owning, operating, managing, or controlling any railroad, street railroad, express, train, sleeping car, freight, freight line, ferry property or enterprise," and to gas and electric, heat and power, and water companies. Power is vested in the executive council of the island.

The law is strong on both rate and service sides. It presents a new feature in making all general orders of the commission subject to the approval of the legislative assembly.

STATISTICS

The compilation of statistics is now recognized as one of the most important functions of government. All the great subjects of modern legislation depend for intelligent consideration upon the completeness and accuracy with which the facts have been statistically developed. Moreover, the cost of large statistical investigations, like a census, is so great as to place them beyond the resources of individuals or private organizations. Nevertheless, in all private business the statistical method is increasingly recognized as an essential adjunct to ordinary bookkeeping. Commercial statistics regarding the production and movement of crops, of raw materials, of manufactured articles, are compiled in practically every branch of industry, and become the basis of projected plans. As an illustration weekly statements are now compiled of the number of freight cars idle, as compared with the number in the same weeks of previous years, as a helpful clew to the measurement of the general business conditions prevailing throughout the country. Definite knowledge of existing conditions, and the periodical variation in those conditions through the statistical method, has become the foundation of all large commercial enterprise. The machinery and methods of gathering and compiling this enormous mass of statistical data are still crude and in their infancy, but are continually improving.

In Germany the Imperial Statistical Office compiles the more important statistics of the empire, and also of the several kingdoms and states of which it is composed; and German official statistics are recognized as among the most complete and trustworthy. In Great Britain the great body of official statistics is compiled by the Board of Trade and its seventeen departments, and by the Registrar General's office. Well-organized and efficient statistical departments exist in France, Italy, Belgium, and several other European countries. The United States Government took a most important step toward the improvement and the proper correlation of its official statistics when the Census office was made a permanent bureau in 1903; but the statistical work of the government is still divided up among many bureaus, and, in consequence, there is great overlapping, much duplication, and a lack of coördination so complete that marked discrepancies and inconsistencies continue to detract from its value.

Government statistics may be divided into two groups, administrative and sociological. In the first group belong such statistics as are necessary for the efficient administration of the government, like those of the Comptroller of the Currency, as to the national banks, the Interstate Commerce Commission, relating to the railroads, and the Bureau of Statistics, relating to exports and imports. Another great body of statistics, which has no direct relationship to administrative needs, is compiled primarily for the information of the public, and for general sociological and economic purposes. While the purpose of the census, as originally established in 1790, was purely political, to establish a basis for the apportionment of representatives in Congress between the several states, that purpose has become subordinate to the sociological uses, endless in number, which justify its elaborate analyses of the population returns, its complete record of agricultural growth and conditions, its study of the progress and characteristics of manufactures, and its annual reports on vital statistics.

The Census.—The United States census of 1790 was unique in that it was the first of a series of national enumerations ordained to recur at fixed decennial intervals. The system of decennial censuses was adopted by Great Britain in 1801, and in 1871 was extended to all the British dominions and dependencies, including India, thus making it a periodical counting of the largest number of people of whom a census was ever taken. It was adopted by France in 1818; and that country has since set the example of a population census every five years, the last having been taken in 1906. Germany began her decennial census in 1871, and in 1905 took her first five-year-population census. These are the only two countries in which the five-year census is taken; a strong movement is on foot to introduce it in Great Britain. The Netherlands began a decennial census in 1829; Switzerland in 1837; Belgium in 1846; Sweden in 1849; Austria-Hungary in 1850; Italy in 1861; Portugal in 1864. Russia took her first census in 1851 and her last in 1897, there being no provision for decennial enumerations. No census has ever been taken of Turkey or of her principal dependencies, or of the greater part of Asia or Africa. Plans for a census of the Chinese Empire are now under consideration. It is estimated that less than half of the population of the world has been officially enumerated in a census.

Censuses have been taken in all the Central and South American states except Ecuador, but in none of them is there provision for the decennial enumeration. The subject of such enumerations upon a uniform year and date has been under serious consideration at the Pan-American congresses. The prevailing date for national periodical censuses is that adopted by the United States, the last year of the decade, but Great Britain adopts the subsequent year. The machinery is now in process of organization for the enumeration on April 1, 1911, of the vast population under the British flag.

THE INTERNATIONAL METRIC SYSTEM

Henry D. Hubbard

The credit is due largely to France for the decimal system of weights and measures now adopted by nearly all civilized nations. Its success in replacing the countless local units of the world has been astonishing. Beginning in 1870, a series of international conferences at Paris culminated in the metric convention (May 20, 1875) signed by the United States, and sixteen of the leading nations providing for a permanent international bureau of weights and measures for the custody of the metric standards. The international committee in charge of its work is now the highest tribunal of metrology. The bureau is on neutral territory ceded by France, at Sèvres, near Paris, and from it metric standards have been sent to all contributory countries, now twenty-four in number, viz.:

Argentina
Austria
Belgium
Canada*
Chili
Denmark
France
Germany
Great Britain*
Hungary
Italy
Japan*
Mexico
Norway
Peru
Portugal
Roumania
Russia*
Servia
Spain
Sweden
Switzerland
United States*
Uruguay

The metric system is obligatory in all these countries (except those marked *, where it is legalized and used for many purposes). Besides the above, the metric system is also obligatory in the following:

Bolivia
Brazil
Bulgaria
Colombia
Finland
Holland
Luxemburg
Montenegro
Turkey

In the United States the metric system is the only one legalized for all purposes by act of Congress (July 28, 1866). Congress also provided the states of the Union with full sets of metric standards, fixing the subsidiary silver coinage in metric units, and legalized the electrical measures based upon the metric system. The system has long been obligatory in Porto Rico, the Philippines, and in the medical work of the United States army, navy, and marine hospital service. The metric system is much used in manufacturing scientific, medical, and technical equipment, and in the export trade. The recent increase in its use is due to the growth of internationalism and the urgent need of international units. Its use is taught in the schools and colleges, and through scientific technology is becoming firmly established in the industries.

The Australian House of Representatives (Aug. 4, 1910), by vote of thirty-five to two, urged the British Parliament to adopt the decimal system. The parliaments of Canada, South Africa, and New Zealand had already taken similar action. In the United States every committee report upon the subject in Congress has favored its adoption, as have also the American Institute of Electrical Engineers, and many organizations.

Denmark recently (by law of May 4, 1907) adopted the metric system to take effect for official purposes April 1, 1911, and for public transactions one year later. The Chinese Empire (by law of Aug. 29, 1908) adopted a modified system in which the unit of length, the ch'ih (foot), is exactly thirty-two centimeters. The system is decimal, its terms are fixed in metric units, and the metric standards thus become those of China.

Synopsis of the System.—The fundamental unit of the metric system is the meter—the unit of length. From this the units of capacity (liter) and of weight (gram) were derived. All other units are the decimal subdivisions or multiples of these. These three units are simply related—e. g., for all practical purposes one cubic decimeter equals one liter, and one liter of water weighs one kilogram (1 meter = 39.37 in., 1 kilogram = 2.2046 lbs.) The metric tables are formed by combining the words "meter," "gram," and "liter" with six numerical prefixes, as in the following tables:

PREFIXES	MEANING			UNITS
milli-	= *one thousandth*	$\frac{1}{1000}$	.001	
centi-	= *one hundredth*	$\frac{1}{100}$	.01	"meter" *for length,*
deci-	= *one tenth*	$\frac{1}{10}$	.1	
Unit	= *one*		1	"gram" *for weight or mass,*
deka-	= *ten*	$\frac{10}{1}$	10	
hecto-	= *one hundred*	$\frac{100}{1}$	100	"liter" *for capacity.*
kilo-	= *one thousand*	$\frac{1000}{1}$	1000	

XII. PUBLIC FINANCE, BANKING, AND INSURANCE

PUBLIC FINANCE

HENRY B. GARDNER

Budget Making. — During recent years there has been in this country a growing recognition of the importance of sound principles of budget making and accounting as a means of avoiding waste in public expenditures and securing efficiency in the administration of public affairs.

In the field of federal finance a step toward a more careful estimate of expenses by the executive department was taken by the inclusion in the sundry civil appropriation bill, March 4, 1909, of a provision requiring the Secretary of the Treasury, after receiving the departmental estimates, to compare their total with the estimated revenues for the ensuing year. If they prove to be in excess of the estimated revenues, he is required to submit them to the President. If the President, after consultation with the heads of departments, believes that they cannot, without injury to the public service, be reduced so as to bring them within the estimated revenue, he is then required to recommend to Congress new sources of taxation or new loans to make up the deficit. According to Mr. Tawney, chairman of the House committee on appropriations, the value of this provision is evidenced by the fact that the estimates submitted to Congress in Dec., 1909, were $80,261,738 less than the estimates submitted at the previous session and $44,706,231 less than the appropriations made by Congress pursuant to the previous year's estimates.

The great obstacle to economy in appropriation and the maintenance of an approximate balance between revenue and expenditure lies in the great number of committees among which is distributed the work of determining the sources of revenue and the appropriations. The necessity of devising some plan to overcome this evil and to concentrate responsibility has been emphasized during the last session of Congress by the President, the Secretary of the Treasury, the chairman of the Senate committee on finance, and the House committee on appropriations. In the Senate, indeed, there was formed a committee on public expenditures composed of the chairmen of the various committees having charge of appropriations; but this particular plan failed to yield important results. Congress, however, appropriated $100,000 to enable the President to investigate the organization and accounting systems of the executive departments, and this investigation is now under way.

State Control Over Expenditures. —In the field of state and local finance Indiana and Washington were added, in 1909, to the list of twenty-three states which had already provided some form of state control (through examination of accounts, the requirement of reports, the establishment of uniform accounting systems, or some combination of these requirements) over the accounts of local financial officers. Bills for establishing similar systems have also been introduced in the legislatures of New Jersey and Kentucky. The legislation in both Indiana and Washington is modeled on that of Ohio. The Indiana law, which perhaps represents the most advanced type of legislation of this character, provides for a state board of accounts composed of the governor, auditor, and state examiner, the last named being an officer created by the law. He must be "a skillful accountant and well versed in public accounting," and is to be assisted by two deputies, and field examiners. The state board of accounts is to provide an uniform accounting system for all local bodies, which shall exhibit a true account and detailed statement of receipts and expenditures of all public officers. It is also to provide a complete cost system for all public service industries. Full financial reports are to be presented to the examiner each year on prescribed forms, by all counties, towns, cities, townships and school districts in the state, and these reports are to be summarized, tabulated, and published by the examiner. The examiner also has full power of examining the accounts of all public officers.

Existing conditions in the country at large are thus summed up by Mr. Roy Smith in a series of articles in the *Journal of Accountancy,* Vol. IX.

> This movement which began in a single state in 1878 has spread until now over one half the states have more or less extensive systems of supervision over local accounting. The authority in seventeen of these states includes that of the installation of systems of accounts for a part or all local officials. Only six of the twenty-five states exercising supervision do not require reports from any local officers. Only one of these states exercises no auditing power, and all enjoy more or less effective means, clearly stated in the statutes, of enforcing their laws upon the local governments.

Other agencies exercising an influence in the direction of uniform accounting by cities have been the federal Census Office, the National Municipal League, and the National Association of Comptrollers and Accounting officers.

An investigation of municipal expenditures and accounting, by a competent commission, is being carried on in Chicago, and the thorough investigations of the Bureau of Municipal Research in New York are producing important results in connection with the methods of preparing the budget and in the accounting systems of that city. In Aug., 1910, Herman A. Metz, ex-Comptroller of New York City, donated to the bureau $10,000 a year for three years for the purpose of "making available to American cities the best principles and practice worked out in municipal accounting and reporting." A somewhat similar bureau has also been established in Chicago. (See IX, *Municipal Government.*)

FEDERAL REVENUE AND EXPENDITURES

Receipts and Disbursements.—The outcome of the financial year ending June 30, 1910, was much more favorable than was anticipated. The previous year had shown an excess of ordinary disbursements over ordinary receipts of $58,734,954, or, if we add the expenditures on account of the Panama Canal, a deficit of $90,154,397.34.

In his report at the opening of Congress in Dec., 1909, the Secretary of the Treasury made the following estimate for the year ending June 30, 1910:

Ordinary receipts	$648,000,000
Ordinary disbursements	682,075,620
Deficit	34,075,620
Expenditures for Panama Canal	38,000,000
Deficit, including expenditures for Panama Canal	72,075,620

The actual results were:

Ordinary receipts	$675,511,715
Ordinary disbursements	659,705,391
Surplus	15,806,324
Expenditures for Panama Canal	33,911,673
Deficit, including expenditures for Panama Canal	18,105,349

This favorable showing was due to the fact that on the side of receipts all items, with the exception of customs, which fell slightly below the estimates, exceeded the estimated amounts, while all expenditures, with the exception of those for Indian affairs, fell below the estimated amounts. The excess in receipts from internal revenue was $16,000,000, from the corporation tax $6,000,000, and in receipts from miscellaneous sources $7,000,000. The saving in expenditures took place chiefly in the Department of War, $9,000,000, and in the Post Office Department, the deficit in which was only $8,496,000 as compared with the Secretary's estimate of $16,881,000 and $19,501,000 in 1909.

Under these conditions it has been possible to withhold the bond issues which earlier in the year seemed inevitable. The available cash balance in the Treasury fell, however, from $124,453,841 to $100,490,784.

Federal Appropriations.—That the second session of the sixty-first Congress made some effort in the direction of economy, is shown by the fact that for the first time since the second session of the fifty-seventh Congress appropriations showed a decrease as compared with the year preceding. Omitting in both years the permanent annual appropriations, which are practically unaffected by the action of Congress in making its annual appropriations, the expenditures for the post office, practically met out of the revenue from the post office, the expenditures for the Panama Canal, and the advances to the reclamation fund to be repaid out of that fund, the appropriations for 1910 were $615,975,404 and for 1911, $594,436,831, not a large decrease, but still notable in view of the fact that between 1904 and 1910 appropriations calculated on the same basis increased by over $150,000,000.

The most important financial measures of the fiscal year 1909–10 were the joint resolution submitting to the state legislatures an amendment to the constitution authorizing the imposition of an income tax by the Federal Government; the tariff act of Aug. 5, 1909, including a section imposing a Federal tax on the net incomes of corporations; and the two acts of June 25, 1910, one authorizing the issue of bonds to provide funds for reclamation projects, and the other providing for the establishment of postal savings banks.

The Tariff Act.—The preliminary work of preparation of the new tariff bill was done by the Committee of Ways and Means of the House and Finance Committee of the Senate during the winter and spring of 1908–09, the former committee holding extended public hearings. The actual work of legislation was deferred to the special session which convened March 15, 1909. On March 18th the bill was reported to the House by the Committee on Ways and Means. It passed the House on April 9th, was reported to the Senate, with extensive amendments, by its Committee on Finance on April 12th, was passed in its amended form by the Senate on July 8th, and was sent to a conference committee which reported on July 30th. The bill, as reported, was passed by the House on the next day, and by the Senate on Aug. 5th, on which day it also received the signature of the President. The most marked reductions proposed by those in charge of the bill were contained in the House bill; the rates contained in this bill were considerably raised in the Senate; the bill, as finally passed, conformed more closely to the Senate than to the House bill, but embodied some compromises between these two bills, the reductions from the level of the Senate bill being apparently due in large measure to the intervention of the President.

The House Bill.—The most marked changes in the bill as originally presented to the House were the placing of iron ore, bituminous coal, hides, and mechanically ground wood pulp on the free list, and the imposition of a tax of 8 cts. a pound on tea, which has for many years been admitted free. Considerable reductions were also made throughout the iron and steel schedule, the average reduction on iron and steel products serving as raw materials and tools for manufacturers amounting to about 25% of existing duties. The rate on pig iron was reduced from $4.00 to $2.50 and on steel rails from $7.84 to $3.92. On iron and steel products ready for consumption there was little or no reduction, and in some cases duties were increased. Slight reductions were made on the products of leather other than gloves, the duties on which were considerably increased. On timber hewn, squared or sided, the rate was reduced from 1 ct. to $\frac{1}{2}$ ct. per cubic foot, and on sawed lumber, not planed or finished, from $2.00 to $1.00 per thousand feet, with corresponding reductions on planed and finished lumber. On clapboards there was a reduction from $1.50 to $1.00 per thousand. On the lowest grade of printing paper worth less than 2 cts. a pound the duty was reduced from $\frac{3}{10}$ ct. to $\frac{1}{10}$ ct. a pound, and on the next higher grade (worth from 2 cts. to 2$\frac{1}{2}$ cts.) from $\frac{4}{10}$ ct. to $\frac{2}{10}$ ct. Reductions of from 20% to 25% were made in the case of meats and of about 15% in the case of marble. The rate of 20% on agricultural implements was reduced to 15%, with the provision that they should be admitted free from countries which admitted free such implements when imported from the United States.

There were also numerous reductions of minor importance on a great number of other articles, particularly in the chemical schedule. In the glass schedule the duties on some of the larger sizes of plate glass were lowered, but on some of the smaller sizes they were increased. In the textile schedule the changes were not important. The duties were lowered on unbleached cotton yarns, and some reduction was also made in the cheaper grades of carpet wools and dress goods of wool with a cotton warp. There were reductions also on threads, twines, and cords made from flax, hemp, or ramie, and on certain classes of oilcloth, and rugs and carpets made of vegetable fiber other than cotton. On carded and combed silk the duty was reduced from 40 cts. to 35 cts. per pound. There was a very slight reduction on refined sugar. On the other hand, in the case of some articles, certain classes of hosiery, leather gloves, cocoa, chocolate, spices, and liquors, there were notable increases. The duties were also slightly increased on lemons and pineapples.

The bill passed the House without substantial change except that the duty on tea was abandoned and a duty of $\frac{1}{12}$ ct. per pound was retained on wood pulp from countries imposing restrictions on the exportation of pulp wood or wood pulp, and the countervailing duty on mineral oils provided for in the existing law was removed.

The Senate Bill.—In the Senate the duty on hides was restored, and duties were imposed on coal and iron ore at rates somewhat lower than the existing rates. The duty on lumber in the rough was increased to $1.50, with a somewhat less than proportionate increase over the House rates on planed and finished lumber; the existing rates on clap-boards were restored, and the existing rates of 30 cts. per thousand on shingles increased to 50 cts. The House rate of $\frac{1}{10}$ ct. on the cheaper grades of printing paper was doubled, and the existing rates on the cheaper grades of writing paper increased. The liquor schedule was subjected to a still further increase. In the iron and steel schedule an increase was made in the House rates on files, screws, and razors, the rate on the last named being placed above the existing rates. The existing rates were restored on meats and the cheaper grades of wool. The provision in the House bill for the free admission of agricultural implements was removed and increased rates were imposed on manufactured furs. In some cases, however, the Senate reduced the House rates, e. g., on cocoa, chocolate, spices. On hosiery and gloves the existing rates were substantially restored, the rates on the cheaper grades of gloves being somewhat below the existing level. On marble the lower rates imposed in the House bill were still further reduced. On paintings and statuary the duty was reduced from 20% to 15% and removed entirely in the case of paintings and statuary more than twenty years old. In the cotton and silk schedules the Senate introduced extensive reclassifications. It is extremely difficult to say what alterations in rates are involved in these changes, but there can be little question that in some cases they mean a distinct increase.

In the main the conference bill which was enacted into law followed the Senate bill rather than the House bill, although, as a result of the pressure brought to bear by the President, hides were replaced on the free list, and the duty on boots and shoes was reduced from 25% to 10%, a rate below that of either the House or Senate bill. The duty on bituminous coal (existing law, 67 cts.) was placed at 45 cts. per ton; on iron ore (existing rate, 40 cts.) at 15 cts. per ton; on lumber in the rough at $1.25 per thousand feet, and the rates on planed and finished lumber were reduced even slightly below those in the House bill. On clapboards the rate was fixed at $1.25. On the cheaper grades of printing paper, worth not over $2\frac{1}{4}$ cts. per pound, the rate was fixed at $\frac{3}{16}$ ct. per pound. In a few cases, including meats and agricultural implements, on which rates had been reduced by the House and restored by the Senate, the House rates were retained. They were also in large part retained in the case of hosiery, on which the House had raised the rate and the Senate had restored the existing rate.

Summary of the Law.—Characterizing the bill as a whole, it must be said that the changes which it made are of minor importance from the point of view both of consumers and the industries of the country. The greater part of the reductions were on articles not imported to any considerable extent, and the reductions were not sufficient to encourage their importation. The bill could hardly be expected to produce an appreciable reduction in living expenses, nor, on the other hand, in view of the other influences at work, can it be fairly charged with the continued movement toward higher prices. The changes which seemed to promise the most important results, the placing of hides on the free list and the reductions in the duties on wood pulp and printing paper, have been largely counterbalanced by the constantly increasing demand for hides and the provision in the law for retaliatory duties on imports of wood pulp and paper from those countries which place restrictions on the exportation of these commodities or of wood used for making pulp. In the case of wood pulp the retaliatory duty consists of $\frac{1}{12}$ ct. per pound plus the export duty, and in the case of paper, $\frac{1}{10}$ ct. per pound plus the export duty. A large portion of our imports of these commodities comes from the provinces of Ontario and Quebec. As these provinces forbid the exportation of pulp wood cut on Crown lands the countervailing duties of $\frac{1}{12}$ ct. and $\frac{1}{10}$ ct. have been imposed upon imported wood pulp and printing paper made from such wood.

It is certain that the act has not satisfied the demand for tariff revision, even within the ranks of the Republican Party, among whose representatives from the western states were found the bitterest opponents of the bill in its progress through Congress. The failure to reduce the high rates of the textile schedules, particularly, has caused great dissatisfaction. So strong is this feeling that the President has been led to advocate further revision of particular schedules on the basis of the information to be gathered by the tariff board referred to below.

Nor from the point of view of public revenue can the act of 1909 be regarded as an important measure. It is true that it has proved effective as a means of raising revenue, but there is no reason to believe that it has been more effective than the act which it replaced would have been. The following figures, bringing into comparison the year ending June 30, 1910 (during eleven months of which

IMPORTS ENTERED FOR CONSUMPTION AND DUTIES COLLECTED THEREON
1905–1910

YEAR.	Free.	Dutiable.	Total.	Per cent of Free.
1905	$517,073,277	$570,044,856	$1,087,118,133	47.56
1906	548,695,764	664,721,885	1,213,417,649	45.22
1907	641,953,451	773,448,834	1,415,402,285	45.35
1908	525,704,745	657,415,920	1,183,120,665	44.43
1909	599,375,868	682,265,867	1,281,641,735	46.77
1910	761,354,434	786,255,237	1,547,609,671	49.20

YEAR.	Amount of Duty Collected.	AVERAGE AD VALOREM RATE OF DUTY ON.	
		Dutiable	Free and Dutiable.
1905	$258,426,294	45.24	23.77
1906	293,910,395	44.16	24.22
1907	329,480,048	42.55	23.28
1908	282,582,894	42.94	23.88
1909	294,667,054	43.15	22.99
1910	326,577,840	41.54	21.10

the new act was in operation), with the years immediately preceding, may not have great significance, but so far as they go they confirm the above view as to the importance of the changes made by the act. This is evident when we compare a year of large importations (1907) under the Dingley law with 1910, also a year of large importations. Approximately one third of the excess of free imports in the later, as compared with the earlier, year, is due to India rubber and its substitutes, which were on the free list in 1907.

In addition, however, to change in rates, the act of 1909 contained provisions of importance affecting the administration of the law, our relations with the Philippines and foreign countries, and possibly the method of procedure in future revisions of the tariff.

The Philippine Tariff.—In the case of the Philippine Islands, all goods which are the product, or manufactured from the product, of those Islands or the United States, with the exception of rice, are to be admitted free of duty, subject to the following limitations as to the amounts to be admitted in any one fiscal year in the case of certain articles: sugar, 300,000 tons; wrapper tobacco, 300,000 pounds; filler tobacco, 1,000,000 pounds; cigars, 150,000,000. In return the Philippine Islands are required to admit free of duty the products of the United States and to refrain from levying export duties on Philippine products admitted free to the United States. On imports which would be subject to an internal revenue tax if produced in the importing country, each country may impose an equivalent tax.

Reciprocity. — The act withdrew from the President the limited power of making reciprocity agreements with other nations contained in Section 3 of the act of 1897 and directed the abrogation of all existing agreements. In accordance with this provision, agreements were terminated with nine countries, including Great Britain, France, Germany, the Netherlands, Switzerland, and Italy.

Maximum and Minimum Tariff.—The act also established for the first time in our tariff legislation the system of a maximum and minimum tariff. The rates as stated in the various schedules and the free list constitute the minimum tariff, and these rates plus a tax of 25% *ad valorem*, constitute the maximum tariff, the additional tax covering the free list as well as the dutiable list of the minimum tariff. The maximum tariff was to go into operation automatically from and after March 31, 1910, on imports from all countries which had not shown to the satisfaction of the President that they made no undue discrimination against the importation of the products of the United States; and whenever at any future time the President shall become convinced that any nation is making such undue discriminations, it becomes his duty to apply the maximum tariff to the imports from such nation. In the case of some nations, notably Germany, France, and Canada, there were extended negotiations, but by March 31st satisfactory understandings had been reached with all and the maximum tariff has not as yet been applied.

The Tariff Board.—To assist the President to gain the information, in regard to the practices of foreign nations, necessary to carry out the provisions of this section, he was authorized to employ such persons as might be required. The exact nature of the purposes for which such persons might be used was not specifically stated and was a matter of dispute during the progress of the bill. The President appointed three gentlemen of recognized ability and standing. At the next session of Congress he secured an appropriation of $250,000 for carrying on the work in which they are engaged, which work is well known to extend far beyond the determination of the fact whether any nation unduly discriminates against imports from the United States, and to include the collection of data in regard to costs of production in this and foreign countries which may serve as the basis for a more intelligent consideration of tariff rates in the future.

Customs Administration.—The act of Aug. 5th also contained amendments to the customs administration act, the tendency of which is to make the enforcement of the law more stringent. The most notable change was the establishment at Washington of a Customs Court of last resort, consisting of a presiding justice and four associate justices with salaries of $10,000. Appeals from the decisions of the Board of General Appraisers now go to this Court. Provision is also made for the appointment of an assistant attorney general at a salary of $10,000 a year, a deputy assistant attorney general at a salary of $7,500, and four attorneys at salaries of $5,000, to have charge of the interests of the government in customs cases.

Market Value.—In the case of goods produced abroad for export, which have no established market value in the country of production, the law terminates the more liberal treatment embodied in the agreement made with Germany during the administration of Pres. Roosevelt. It provides that goods shall be valued at not less than their wholesale value in the markets of the United States, deduction made of the estimated amount of customs duties, cost of transportation and insurance, and a commission not exceeding six per cent in the case of consigned goods, or of general expenses and profits not exceeding eight per cent in the case of purchased goods.

The Sugar Frauds.—There has also been evident an attempt to increase the general efficiency of the customs administration and to prosecute vigorously offenders against its provisions. The most notable instance of this kind has been the prosecution of the American Sugar Refining Company and its officers for fraudulent underweighing which has been systematically practiced during a long series of years. In April, 1909, the company made a settlement with the government, repaying $2,269,898, to which was added over $600,000 in Feb., 1910. In Nov., 1909, five employees of the company were convicted, of whom four were later sentenced to a year's imprisonment. In the same month a cheese importer was convicted on a like charge. In Jan., 1910, the secretary of the American Sugar Refining Company was indicted and later convicted. As a result of the investigations which led to these prosecutions, eighty assistant weighers were discharged from the customs service.

There seems to be little doubt that frauds on the customs, in the form of undervaluation, as well as underweighing, have been widespread and that a radical change in the principles which have governed appointments will be necessary if results of permanent value are to be obtained. In his report presented to Congress in Dec., 1909, the Secretary of the Treasury says:

> The study of the causes of the demoralization which has been revealed is still incomplete, but the main causes are evident. It is clear, for instance, that the influence of local politics and politicians upon the customs service has been most deleterious, and has promoted that laxity and low tone which prepare and furnish an inviting soil for dishonesty and fraud. Unless the customs service can be released from the payment of political debts and exactions, and from meeting the supposed exigencies of political organizations, big and little, it will be impossible to have an honest service for any length of time.

Internal Revenue.—The tariff act also included legislation raising the internal revenue tax on certain of the manufactures of tobacco and imposing a tax on the net profits of corporations.

The taxes on various manufactures of tobacco were increased as follows: on manufactured tobacco and snuff from 6 cts. to 8 cts. per pound; on little cigars weighing not more than 3 pounds per 1,000, from 54 cts. to 75 cts. per 1,000; on little cigarettes weighing not more than 3 pounds per 1,000, from rates of 54 cts. and $1.08 to a uniform rate of $1.25 per 1,000; on cigarettes weighing more than 3 pounds per 1,000, from $3.00 to $3.60 per 1,000. These increased rates, however, did not go into effect until July 1, 1910.

The Corporation Tax.—The tariff bill as introduced in the House contained provision for an inheritance tax. The Senate bill, however, contained no such provision. During the progress of the bill in the Senate there was a determined effort which bade fair to be successful to add an income tax provision. On June 16th the President sent a special message to the Senate urging that, as the constitutionality of an income tax was open to question, a tax of 2 per cent on the net earnings of corporations be included in the bill, and that a joint resolution be adopted submitting to the legislatures of the states an amendment to the Constitution empowering the Federal Government to levy an income tax without apportionment among the states. The President's suggestion was followed and the corporation tax became law, the rate having been reduced in the conference committee to 1 per cent.

In general, the law provides that every corporation, joint stock company or association, organized for profit and having a capital stock, and insurance companies, organized under the laws of the United States, "shall be subject to pay annually a special excise tax with respect to the carrying on or doing business equivalent to one per cent upon the entire net income, over and above five thousand dollars, received by it from all sources during such year, exclusive of the amounts received by it as dividends upon the stock of other corporations, joint stock companies, or associations, or insurance companies, subject to the tax hereby imposed." Corporations organized under the laws of foreign nations and doing business in the United States are subject to the tax on their net incomes derived from business done in this country. Labor, agricultural, and horticultural organizations, fraternal beneficiary societies, building and loan associations, operated exclusively for the benefit of their members, and corporations and associations organized for religious, charitable, and educational purposes, no part of the income of which inures to the benefit of any private stockholder or individual, are exempted.

Net income is to be ascertained by deducting from gross income (1) all ordinary and necessary expenses actually paid within the year, out of income, in the maintenance and operation of the business, including rental and franchise payments; (2) all losses actually sustained and not compensated by insurance, or otherwise, including a reasonable allowance for depreciation, and in the case of insurance companies, the sums other than dividends paid on policy and annuity contracts and the net addition required by law to be made to reserve funds; (3) interest actually paid on bonded or other indebtedness, to an amount of such indebtedness not in excess of the paid-up capital stock at the close of the year, and, in the case of banks, interest paid on deposits; (4) all sums paid for taxes under the laws of the Federal or state governments, or imposed by foreign governments as a condition of carrying on business; (5) the amount received as dividends on the stock of other companies subject to the tax.

Penalties. — Every corporation of the classes above described, whatever its net income, is required before the first day of March each year to make a return under oath, setting forth the total amount of its paid-up capital stock and indebtedness at the close of the calendar year preceding, its gross income from all sources during the year and the various items mentioned above to be deducted in estimating net income. Whenever the Commissioner of Internal Revenue has reason to believe that a return is incorrect or when no return has been made, he may call for additional information and may designate any regularly appointed revenue agent to examine the books and papers, and to require the attendance of any officer or employee of the company, and to take his testimony under oath. Upon the information so obtained the Commissioner may amend any return, or make a return when none has been made. In case of returns made with fraudulent intent he is directed to double the tax, and, in case of refusal or neglect to make a return, to add fifty per cent to it. The tax becomes payable on June 30th, delay beyond this date involving a penalty of five per cent of the amount of the tax and interest at one per cent a month. The returns made by the companies subject to the tax are to be filed in the office of the commissioner of internal revenue "and shall constitute public records and be open to inspection as such." All persons concerned with the assessment or collection of the tax are forbidden under penalty of a fine of $1,000, or imprisonment for one year, or both, to disclose any information which may come into their possession, but such information may be given out on order of the President. Companies neglecting to make returns or making false returns are subject to a fine of from $1,000 to $10,000, and any officer of a company making a false statement is subject to a fine of $1,000, or imprisonment for one year, or both.

Objections.—The addition of this tax to the sources of income of the Federal Government has been strongly opposed by the business interests of the country and, to some extent, by the officers of state governments. The grounds of these objections may be summarized as follows: By taxing corporations not engaged in interstate commerce it encroaches upon a source of revenue which properly belongs to the states. It constitutes an undue burden upon corporations, which are already heavily taxed in many states. It involves an unfair discrimination in favor of those industries carried on by individuals and partnerships, which are exempt from the tax. By making the returns of corporations public records open to inspection, it makes a wholly unnecessary and unjustifiable disclosure of private affairs which may involve serious injury to some corporations. It is unconstitutional since it is a tax upon income, and therefore a direct tax, which under the provisions of the Constitution must be apportioned among the states on the basis of population. The objections to the publicity features of the act have been extremely vigorous and Congress has been petitioned by many business organizations to repeal this feature. At the last session of Congress an appropriation of $25,000 was made for indexing, classifying, and exhibiting the returns of the corporations, under rules to be prescribed by the Secretary of the Treasury and approved by the President. Several suits have been brought to test the constitutionality of the act. The suits were argued before the Supreme Court during the early months of 1910 and it was hoped that they might be decided before the first payment of the tax became due. The crippled condition of the Supreme Court led to an assignment for a rehearing on Jan. 2, 1911. The total receipts were $20,959,783 at close of fiscal year.

The Income Tax Amendment.—Little progress in the consideration of the amendment has as yet been made by the state legislatures. It has been ratified by nine states (Alabama, Georgia, Kentucky, Mississippi, South Carolina, Illinois, Oklahoma, Texas, and Maryland). In five states (Virginia, New York, Rhode Island, Massachusetts, and Louisiana) one or both Houses have refused to ratify it. The legislatures of two states (Connecticut and Washington) have voted to postpone consideration of the matter to 1911. In the remaining states the question has apparently not yet been considered.

Strong opposition to the amendment has been manifested by a considerable section of the business interests, which are in general opposed to the further extension of Federal powers, and by the governing authorities of many of the states who feel that the demand for increasing expenditures by the states require that these bodies should not part with any of the sources of revenue which they now control. This feeling was vigorously expressed at the meeting of the International Tax Conference at Louisville in Sept., 1909. In New York, where ratification failed by only a single vote in the lower House, Gov. Hughes opposed the amendment on the ground that the provision that the tax might be laid on incomes "from whatever source derived" made possible the taxation of the interest on the securities of state and local governments and thereby placed these bodies at the mercy of the Federal Government. (See V, *The Income Tax.*)

The Public Debt.—No change took place in the interest-bearing debt of the United States during the fiscal year 1909–10. There was, however, a considerable body of legislation which may have an important influence on the character of the debt in the future.

By the tariff act of Aug. 5, 1909, the Secretary of the Treasury was authorized to issue bonds, bearing three per cent interest payable in gold, to the amount of $295,569,000, the proceeds to be used to defray the expenses of the Panama Canal and to reimburse the Treasury for canal expenditures already made out of ordinary revenues. The amount of the issue was fixed at the sum named because with the $84,631,900 previously borrowed on two per cent bonds under the act of June 28, 1902, it covers the estimated cost of the canal. The Secretary has not as yet made use of the power thus conferred because of a conviction that the issue of such bonds would depress the price of the two per cents now held by the banks as part of the basis of circulation. In order to avoid this result he has urged upon Congress the necessity of imposing upon the new bonds, when used as the basis of bank-note circulation, a tax which would equalize the return to be derived from them with the return on the two per cents; but Congress has not yet responded to his appeal.

Certificates of Indebtedness.—By the same act, the act of June 13, 1898, the purpose of which was to provide for the expenditures of the Spanish War, is so amended as to authorize the Secretary of the Treasury to issue from time to time, at a rate of interest not exceeding three per cent, certificates of indebtedness to such amounts as may in his judgment be necessary to meet public expenditures. Such certificates are to be payable at such time, not exceeding one year from date of issue, as the secretary may prescribe, and the amount outstanding at any time is not to exceed $200,000,000. The Treasury is thus better equipped to meet a temporary deficit than it has ever been before.

Neither the principal of the Panama bonds, nor the principal or interest of these certificates were specifically made payable in gold, but this defect was remedied by the act of Feb. 4, 1910, which provides that the interest and principal of all bonds and certificates of indebtedness hereafter issued shall be payable in gold coin of the present standard. The act of March 4th, also gave the Secretary of the Treasury full discretion as to the denominations in which bonds should be issued.

Reclamation Funds.—By act of June 25, 1910, in order to make possible the completion of reclamation projects already begun, the Secretary of the Treasury was authorized to transfer to the reclamation fund not exceeding $20,000,000, sums so transferred to be used only on such works, performed under existing law, as shall have been approved by the President as feasible and practicable, after examination by a board of engineers and officers of the army appointed by him. To secure the money for making these advances the Secretary of the Treasury was authorized to issue, at not less than par, certificates of indebtedness bearing not over three per cent interest, redeemable after three years and payable in five years, interest and principal payable in gold. The certificates are to be issued under conditions giving all citizens of the United States an equal opportunity to subscribe. Beginning five years after the first advance to the reclamation fund under this act, fifty per cent of the revenues of the reclamation fund is to be paid into the general fund of the Treasury, until such repayments shall equal the amount of the advances made with interest and other expenses incident to the loan.

Postal Savings Banks.—On the same date the postal savings bank act became law. The funds deposited under this act are to bear two per cent interest. Of the sums so deposited, five per cent is to be kept in lawful money in the Treasury of the United States as a reserve fund. The remaining ninety-five per cent is to be deposited, at not less than 2¼ per cent interest in national or state banks in the community in which the deposit is received, such banks being required to furnish security in the form of public bonds or other security supported by the taxing power. The board of trustees, consisting of the Postmaster General, the Secretary of the Treasury, and the Attorney General, in whose hands the administration of the system is placed, are authorized at any time to withdraw from the banks, and to invest in the bonds or other securities of the United States, an amount not exceeding thirty per cent of the funds deposited by the public in postal savings depositories, and the remainder or any portion of it may be withdrawn, for the same purpose, by direction of the President when in his judgment the "general welfare and interests of the United States so require." Furthermore any depositor in a postal savings depository may exchange his deposits in sums of $20, $40, $60, $80, or $100 or multiples thereof, or $500 or multiples thereof, for United States gold bonds of like denomination bearing 2½ per cent interest, redeemable after one year, and payable after twenty years. Investments in such bonds may also be made by the board of trustees. The bonds so authorized are, however, to be issued only (1) when there are outstanding bonds subject to call, in which case the proceeds of the issues shall be applied to the redemption of such outstanding bonds; (2) at times when under authority of law, other than this act, the government desires to issue bonds for the purpose of replenishing the Treasury, in which case the issues shall be in lieu of the issue of a like amount of bonds authorized by other acts. Whenever the board of trustees have funds available for investment in United States bonds they may notify the Secretary of the Treasury of the amount they desire to invest, subject to call, whereupon the Secretary, if there are United States bonds subject to call, shall call in and redeem such quantity as may be needed, and issue to the board of trustees a like amount of similar bonds also subject to call. None of the bonds issued under the act are to be available as security for circulating notes.

It is evident that this act places the total resources of the postal savings depositories, whatever they may prove to be, at the disposal of the United States Treasury, and, in case they should be large, would greatly simplify the task of carrying through refunding operations (in the case—e. g., of the $63,000,000 1908–18 three per cent bonds now subject to call); of providing for extraordinary expenditures such as those on account of the Panama Canal; or of maintaining the value of the two per cent bonds in case they should cease to serve as a security for note issues. It is possible, therefore, that this act may have an important bearing on the future debt operations of the government. (See also XII, *Banking and Currency.*)

STATE AND LOCAL FINANCE

The Inheritance Tax.—It is difficult to discover well-defined tendencies in the legislation of the various states on matters of public finance. There is evident, however, an inclination to develop the inheritance tax as a source of state revenue. At their last regular sessions in 1909, Kansas added such a tax to its revenue sytem, and Maine added a tax on direct heirs to the existing tax on collateral heirs. Illinois (1909) and New York (1910) have also made extensive revisions of their systems. The general rate established by the Kansas law is 5 per cent, but this rate increases to 7½ per cent on the excess over $25,000 up to $50,000; 10 per cent on the excess over $50,000 up to $100,000; 12½ per cent on the excess over $100,000 up to $500,000, and 15 per cent on the excess over $500,000. In the case of lineal ancestors and descendants, including adopted children and their lineal descendants, husband, wife, wife or widow of a son, and husband of a daughter, the corresponding rates are 1, 2, 3, 4, and 5 per cent, as the case may be; and in the case of wife, husband, father, mother, child, or adopted child, there is an exemption of $5,000. In the case of brothers, sisters, nephews, and nieces, the rates are 3, 5, 7½, 10, and 12½ per cent.

In Maine the division into classes of beneficiaries is substantially the same as in the Kansas law. The rates for direct heirs are 1 per cent on amounts from $10,000 to $50,000; 1½ per cent on amounts from $50,000 to $100,000; and 2 per cent on amounts over $100,000. The corresponding rates for brothers, sisters, uncles, aunts, nephews, nieces, and cousins are 4, 4½, and 5 per cent the exemption being reduced to $500, and for others 5, 6, and 7 per cent.

In the Illinois law in the case of direct heirs, there is an exemption of $20,000, the tax being levied only on the excess over that amount. The rates are 1 per cent on sums up to $100,000, and 2 per cent on sums in excess of that amount. For uncles, aunts, nephews, nieces, and their lineal descendants the exemption is reduced to $2,000, and the excess is taxed at 2 per cent for sums up to $20,000, and 4 per cent for sums over that amount. For other beneficiaries the exemption is $500 and the rates 3 per cent on sums up to $10,000; 4 per cent on sums from $10,000 to $20,000; 5 per cent on sums from $20,000 to $50,000; 6 per cent on sums from $50,000 to $100,000; and 10 per cent on sums over $100,000.

The New York Law.—The New York law changes the basis of assessment from the estate to the amount received by each beneficiary (a bill which preserved the former basis of assessment having been vetoed by the governor). The act is notable both for the extent to which it carries the principle of progression and the high rates imposed on property passing to distant relatives and strangers. Direct heirs, Class 1, include only father, mother, widow, and minor child. Class 2 includes husband, adult child, brother, sister, wife or widow of a son, or the husband of a daughter, adopted children in certain cases, and lineal descendants. Class 3 includes all others. The exemptions are for Class 1, $5,000; for Class 2, $500; for Class 3, $100, and the tax is levied on the excess. For Classes 1 and 2 the rates are 1 per cent up to $25,000; 2 per cent on the excess over $25,000 up to $100,000; 3 per cent on the excess over $100,000 up to $500,000; 4 per cent on the excess over $500,000 up to $1,000,000; and 5 per cent on the excess over $1,000,000. For Class 3 the rates are five times those for Classes 1 and 2. Another feature of the New York law is the completeness with which it reaches shares in New York corporations and all property and titles to property situated in the state even though such property is owned by and passes to nonresidents, a practice which, generally followed, is bound to result in double taxation. If Massachusetts should adopt a similar law, stock in New York corporations owned by a citizen of Massachusetts would be taxed in each state, and in some cases would amount to 50 per cent of the value of the stock.

Corporation Taxes.—During the sessions of the state legislatures in 1909 and 1910 there was passed also a considerable number of acts imposing or modifying taxes on corporations, particularly quasi-public corporations. As a rule, these taxes are to be levied on the basis of gross receipts. In 1909 Arizona imposed a tax of 1 per cent on the gross receipts of express, telephone, and telegraph companies from business done within the territory; Arkansas, a tax of 5 per cent on the gross receipts of private car companies; Delaware, a tax of 1/10 per cent on the gross receipts of companies manufacturing steam, gas, or electricity for light, heat, or power; Kansas, a tax of 4 per cent on gross receipts of express companies, less amounts paid to railways. Maine also slightly increased the rates of taxation on the gross receipts of corporations.

In 1910, Oklahoma enacted a comprehensive law, imposing a tax on gross receipts, in addition to the *ad valorem* tax, on the whole range of quasi-public corporations, with the exception of railroads, as well as upon corporations engaged in mining or the production of oil or gas. The rates range from ¼ per cent on water companies to 3 per cent on pipe lines. Steam railways were dealt with in a separate act. Virginia exempted water, light, heat, and power companies from the general franchise tax on corporations, substituting for it a tax of 1 per cent on gross receipts in addition to the *ad valorem* taxes on real and personal property. On telephone companies also the basis was changed from the number of instruments to gross receipts and miles of line. The rate fixed was $2 per mile of line plus 1 per cent of gross receipts up to $50,000 and 2 per cent on the excess over $50,000.

There were some acts imposing taxes on this class of corporations on bases other than gross receipts. Thus Delaware imposed a tax on telephone companies based on miles of wire and number of transmitters; Minnesota, a tax of ¼ mill per bushel on all wheat and flax, and ⅛ mill per bushel on all other grain handled by elevators; and Oregon, a tax of from 25 cents to $2 per horse-power on all persons and corporations other than municipal corporations, using water for the development of power. An unique method for determining the rate of taxation is that provided in the Oklahoma statute dealing with the taxation of steam railroads. On the valuation of the property and franchise of the road as determined by the State Board of Equalization are to be levied state and county taxes, the rates being .02125 for state purposes and .004625 for county purposes on roads whose operating expenses are less than 60 per cent of gross receipts and gradually decreasing as the percentage of operating expenses increases until they reach .016876 for state purposes and .00375 for county purposes in the case of roads whose percentage of operating expenses is 90 per cent or over.

Massachusetts has changed the method of distributing among the towns that portion of the state tax on corporations paid on account of shares owned within the state. Formerly the proceeds of this portion of the tax went to the towns in which the owners of the shares resided. It now goes to the towns in which the business of the corporation is carried on. It is hoped in this way to diminish somewhat the temptation of residence towns to offer inducements to large stockholders in Massachusetts corporations to settle within their limits.

The Ford Franchise Tax.—Perhaps the most important event in the field of corporation taxation, however, was the decision handed down by the New York Court of Appeals Oct. 19, 1909, in regard to what is known as the Ford franchise tax law enacted in 1899. This law provided for the taxation of the franchise values of public service corporations as real estate. It was attacked in the courts first on the ground of constitutionality and, when this question was settled in favor of the law in 1903, on the ground of the methods adopted by the State Board of Tax Commissioners in determining the value of the franchise and assessing the tax. As a result of this long continued litigation the tax up to the present time has been of little value as a source of revenue. The court in its decision allows considerable discretion to the Board of Tax Commissioners in determining the method of valuation of the franchise, approving in the particular case at issue the "net earnings rule" according to which the value of the franchise is determined by the capitalization of net earnings over and above a fair return on tangible property and proper allowance for depreciation, and indicates 7 per cent as a proper rate to be used in capitalizing the earnings. It also lays down the rule that in communities in which real estate is not assessed at its full value the franchise must be assessed at the same percentage of its true value as is the real estate.

As a result of this decision and of a law which enabled the governor to appoint extraordinary terms of the Supreme Court for the consideration of franchise tax cases, rapid progress has been made in the settlement of back taxes. In May, 1910, it was announced that all the cases in Manhattan, with the exception of the Manhattan Elevated and the New York Central had been disposed of and that more than $20,000,000 in taxes had been turned into the city treasury. From this time on, therefore, the law becomes an effective part of the tax system.

The Personal Property Tax.—The ineffectiveness and inequalities of the tax on personal property as an element in the general property tax is a matter of common knowledge, and the tax has been an object of repeated criticisms by tax officials and economists. The latest expression of this opinion is contained in the following resolution adopted at its meeting in Milwaukee in Sept., 1910, by the international tax conference, a body in which both tax officials and economists are largely represented. The resolution is based upon the report of a special committee, composed of both classes of members appointed by the conference of 1909 to investigate the working of the general property tax:

> Resolved, that the failure of the general property tax, in its application to personal property, is due to inherent defects of its theory, that even reasonably fair administration is unattainable, and that attempts to strengthen such administration simply accentuate the in-

equalities and unjust operation of the system.

The efforts of those most active in attempting to reform the system have during the last two years been directed to securing a classification of property for purposes of taxation, with a view to fixing a rate for intangible personalty much below the rate for real estate, a rate, say, of three or four mills on the dollar. The movement, while apparently gaining in strength has not as yet, except in a few instances, affected actual legislation. The establishment of the system was recommended in the report of a special tax commission in Massachusetts, but was held by the Supreme Court of the State to be in conflict with the constitution of the State, and the legislature of 1910 refused to propose an amendment to the constitution with a view to making possible the adoption of the system. The establishment of the system was also proposed in the report of a special tax commission in Rhode Island in 1910, but there is apparently no prospect that it will be considered by the legislature. At the instance of Mayor Gaynor of New York, a bill was introduced in 1910, into the New York Legislature, providing for the abolition of the tax on personal property, was favorably reported by the assembly committee on taxation, but did not come to a vote.

State Tax Commissions.—Another movement which is making distinct headway in legislation looks to establishing administrative machinery better adapted to an effective administration of existing law. This machinery consists of a state commission with large powers of control over local assessors. The movement was initiated by Wisconsin, Michigan, Minnesota, and West Virginia. Oregon created a board with somewhat similar powers in 1909. In the same year Maine enlarged the powers of its state board of tax commissioners in the same direction, and Ohio, in 1910, established a commission modeled upon the most effective commissions in other states. There can be no question that the older of these commissions have produced results of importance in securing a more complete and equitable valuation of property; that they can overcome the difficulties incident to the personal property tax there is, however, little reason to believe.

Rhode Island was the only state in which a special tax commission reported in 1910. In Virginia, Illinois, and Wisconsin such commissions are at work. The commission in Virginia is specially charged, among other things, to consider the practicability of separating the sources of state and local revenue, while the Wisconsin commission is confined to the consideration of the income tax.

Public Debts.—The legislation of 1909 and 1910 contains several instances of a tendency to extend the borrowing power of local bodies, particularly for providing for undertakings which promise to be partially or wholly self-sustaining. The most notable instance of this kind was the amendment to the New York constitution adopted in 1909, exempting from the ten per cent debt limit, debt thereafter incurred for city property held to be self-supporting, and, in the case of New York City, debt previously incurred for rapid transit or dock purposes in so far as these enterprises are self-sustaining. The decision as to the facts in connection with any particular issue of securities rests with the Supreme Court.

In 1910 Mississippi also passed an act enabling cities with a population of 100,000 or more to incur debt to 15 per cent of the valuation of the property for the purpose of improving streets and acquiring water, gas, or electric light works; and in South Carolina a constitutional amendment is pending which provides that the constitutional limitation of debt to 8 per cent of valuation shall not apply to municipal corporations when the proceeds of the bonds are applied to the purchase or establishment of water works, sewerage systems or lighting plants and when the question of issuing the bonds has been submitted to the qualified voters.

The long-continued dispute between Virginia and West Virginia in regard to the division of the debt has been submitted to a referee who has made his report to the Supreme Court before which the case is to be argued at its present term.

BANKING AND CURRENCY

Davis R. Dewey

National Banking System.—There have been no marked features in the growth of the national banking system. The total number of banks in operation, Aug. 31, 1910, was 7,184, compared with 6,998 on Aug. 31, 1909, a gain of 186. This increase, however, does not measure the number of new banks organized. During the past five years the number of new banks formed has been as follows:

1905	486
1906	462
1907	490
1908	323
1909	320
1910 (8 months)	212

Accompanying this movement of extension there has been a constant liquidation of old institutions, particularly in the East, due to mergers of two or more banks, or to conversion into trust companies, operating under state laws. The changes in the number of banks in operation in different sections are shown in the following table:

Section.	Aug. 31, 1909.	Aug. 31, 1910.	Change.
New England	484	474	—10
Eastern States	1,572	1,614	+42
Southern States	1,408	1,455	+47
Middle States	2,005	2,034	+29
Western States	1,124	1,166	+42
Pacific States	400	436	+36
Island possessions	5	5	....
	6,998	7,184	+186

The capitalization of the national banks has now passed the billion mark, and the circulation has reached its maximum record:

Date.	No. of Banks.	Capital, Millions.	Circulation, Millions.
1906, Oct. 31	6,225	$846	$583
1907, Oct. 31	6,650	909	610
1908, Oct. 31	6,873	930	666
1909, Oct. 31	7,025	965	704
1910, Aug. 31	7,184	1,022	717

Closer Bank Supervision.—The most important development has been in the direction of reforms in the management and supervision of banks, largely instituted by the comptroller of the currency, Mr. Laurence O. Murray. Without waiting for sweeping amendments to the banking law, this official apparently realizes that a part at least of the defects in the present system is due to the inefficiency and incapacity of bank management. These reforms may be summarized as follows:

(1) Examinations by national bank examiners are made more strict. Examiners have been instructed to rely more upon their own efforts, and to depend less upon assistance proffered by bank officials and clerks. Examiners have also been advised that they must not borrow either directly or indirectly from any national bank, that they must accept no public office, and not become an officer of any corporation. They are also ordered to coöperate with state bank examiners in the examination of closely affiliated banks, and also with clearing-house examiners. In order to relieve the banks from governmental criticism in delinquencies of trivial importance the examiners are advised to take up points of criticism directly with the bank officials instead of first referring them to the comptroller. Examiners have also been shifted so as to check up and pass upon the work of their predecessors. In Oct. the comptroller began an inspection of the methods of examiners by personally visiting banks. Stricter rules are to be applied in the selection of examiners. Appointments will be made from employees of well-managed banks, and for a probationary period of six months. In June the comptroller reported that, as a result of the changes in methods of examiners, there was a great improvement in the reports. In 1909 out of 100 reports fifty were subject to letters of criticism, while in 1910 the number was reduced to five.

(2) Efforts have been made to secure coöperation between the comptroller and the supervisors and su-

perintendents of state banks, particularly in the establishment of new banks. It has been found that promoters of new banks, especially small institutions in the West, when refused a charter by the comptroller, have applied to state authorities for a local charter, or if refused by state officials, have turned to the Federal bureau. In eighteen months 108 applications for national bank charters were rejected because either the applicants were incompetent, or the business of the community did not justify the establishment of a bank. It is believed that an interchange of information between the Federal bureau and state officials will make such applications unsuccessful and prevent the establishment of weak banks.

(3) Meetings of national bank examiners either at Washington or at group centers have been instituted for the discussion of questions of common interest. It is believed that this will result in greater efficiency and raise the professional standard of the force.

(4) The comptroller has announced that he will pass personally upon all applications for appointment of reserve agents of country banks in reserve cities. Hitherto the approval of such agents has been largely a matter of formal routine, but hereafter it is intended that only strong banks shall be permitted to exercise this function; and inasmuch as the number of reserve cities has grown from sixteen to forty-six, a closer supervision is regarded as highly desirable.

(5) In Sept. it was announced that a credit bureau would be established at Washington which would assemble records showing the character of commercial paper held by banks. This is to supplement the work of local credit bureaus which have already been established by examiners in a few cities. It is believed that with this machinery it will be possible to uncover efforts made to obtain an excessive volume of credit which may ultimately prove a source of weakness to the banks holding the paper. In this way also it may be possible to disclose the amount of credit obtained by directors and bank officers. Such a credit bureau, however, is to be available only for the use of examiners, and not to be open to banks themselves.

(6) Directors have been advised to assume greater personal responsibility in the management of their institutions. Inquiry showed that 2,500 national banks had no by-laws. Each has now been instructed to adopt by-laws providing for the appointment of examining and discount committees, and for the approval by the board of directors, at least once a month, of all loans and discounts.

(7) The comptroller has announced that he will advise the liquidation of banks which continue for any prolonged period in a hazardous condition. Examiners are urged to bring pressure to bear to force banks to wind up their affairs rather than to levy assessments in order to restore an impaired capital.

(8) Efforts are being made to check practices of irregular borrowing. Such methods, it is stated, have grown rapidly in recent years, and it is the intention, through information furnished by examiners, to hereafter hold the banks to stricter accountability.

(9) Banks have been informed that the full penalty of the law will be inflicted whenever reports are not sent in promptly and accurately. Moreover, the names of banks which have been delinquent may be published in the annual report.

(10) More energetic efforts will be made to stop the use of overdrafts which in the total for banks has assumed large proportions. For this purpose the coöperation of state authorities is sought.

Savings Institutions.—Interest in the importance of savings institutions as a factor in prosperity has been increased since the publication in Jan., 1910, of a comprehensive report by the national monetary commission, showing the deposits of all classes of banks accepting savings deposits. The figures are for April 21, 1909, and are far in excess of those returned by the comptroller of the currency. According to the report of the national monetary commission the institutions taking savings are classified as follows:

State banks	8,258
United or mutual savings banks	627
Stock savings banks	913
National banks	6,592
Private banks	993
Loan and trust companies	852
	18,235

The number of depositors and the amount deposited is thus given:

Section.	Number of Banks.	Number of Savings Depositors.	Deposits in Millions.
New England	1,040	3,504,482	$1,392
Eastern States	2,527	5,620,477	2,480
Southern States	3,610	883,325	223
Middle States	6,260	3,781,262	1,123
Western States	3,537	300,815	102
Pacific States	1,253	783,520	354
Island possessions	18	20,815	4
			$5,679

This is nearly $75 of savings in banks, per capita of population.

Rate of Interest.—In New York City a number of the savings banks at the beginning of the year decreased the rate of interest from four to three and a half per cent, and an earnest effort is being made by the bank superintendent of that State to persuade all the banks of the State to follow this example. The reason for this reduction is the decline in the surplus, which in twenty years has fallen from seventeen per cent of the deposits to seven per cent. This decline, in turn, is attributed in part to the fall in value of securities in which the banks have invested, and in part to the stricter laws governing investments. On the other hand, there has been a decided fall in the prices of securities which may be bought.

There is also a widespread movement to require all commercial banks to segregate their savings deposits from commercial deposits, and to invest these funds according to provisions provided for savings banks. Such segregation has already been secured in nine states, seven of them in the last five years. In the West this measure is meeting with opposition on the ground that it prevents the banks from using a considerable volume of funds in loans which are needed in the ordinary operations of commerce.

School Savings Banks.—The establishment of school savings banks continues to show vitality. During the year 1909, according to statistics published by J. H. Thiry, of Long Island City, N. Y., school savings banks were introduced in eleven cities during 1909. The total number of towns and cities which have adopted this system is now over 100. In Pittsburg there are 28,000 depositors with $144,000 to their credit.

Immigrant Banks.—This subject has received the attention of the national immigration commission. (Report Feb. 24, 1910; Sen. Doc. No. 381, 61 Cong., 2 sess.) It is estimated that there are at least 2,625 concerns doing a so-called immigrant banking business, that is, holding deposits for safe-keeping, or receiving money for transmission abroad. One thousand of these concerns are credited to New York, 275 to Illinois, and 175 to Massachusetts. It is estimated that $275,000,000 was sent abroad by aliens in 1907, and one half of this passed through the hands of immigrant bankers. As yet, New Jersey, Massachusetts, and New York are the only states which have attempted to regulate this business.

Postal Savings Banks.—For some years there has been an agitation for the establishment of a postal savings bank system. At first the interest was largely academic, but when the proposition for a governmental guarantee of bank deposits began to meet with a favorable reception, wider attention was aroused in behalf of a postal bank plan as a preferable alternative. The project was indorsed in the platform of the Republican Party in 1908, as well as by the Democrats, and later kept before the people through the insistence by Pres. Taft that the party fulfill its promises.

Among the reasons for the establishment of such a system were: (1) The encouragement of thrift; (2) to provide a place of deposit free from any suspicion of insecurity, and (3) to provide a market for government bonds. It was urged that there were considerable sections of the country which did not possess savings institutions of any kind, and that consequently a portion of the population were not encouraged to form habits of prudence. In particular it was claimed that foreigners ignorant of our institutions hoarded their earnings, thus withdrawing from active use a large amount of money. In one year, according to the post-office department, 128,146 persons took out money orders, in first and second-class offices, amounting to $8,104,000, made payable to bearer. It was also asserted that in many states state laws and local administration were so lax that the failures of banks resulted in loss to depositors, and this, in turn, brought the banks into disrepute. The inability of depositors to withdraw their funds from banks of any kind after the panic of 1907 increased the sense of insecurity. In addition was the financial plea that provision ought to be made for enlarging the market for the two-per-cent bonds, which is now almost exclusively confined to national banks. As bank circulation is now based upon these securities, thus giving to the latter a fictitious value, it is held desirable, if notes are to be issued upon a more liberal basis, according to recent plans of monetary reform, that the banks should be protected against loss occasioned by the removal of this requirement.

In opposition it was argued that (1) The Federal Government should not meddle in matters which belong exclusively to the states, for to the states belong distinctively the encouragement of thrift. The proposed plan is a long step toward paternalism. (2) The project is unconstitutional, no authority for Federal action being found under any clause of the constitution. (3) It would give to the national administration a dangerous control over the savings of the people and lead to a dangerous exercise of political power. The placing of deposits in the hands of a chain of political officials might result in graft and corruption. (4) There are already abundant facilities whereby savings may be invested; in the East there are mutual savings banks, while in the South and West most of the commercial banks have savings departments, and trust companies as well undertake this class of business. According to a statement drawn up by the American Bankers Association there were in 1909 17,794 banks which accepted savings deposits. (5) Foreigners do not send their savings out of the country because of lack of confidence, but in order to aid their families left in Europe, to pay up mortgages, or to assist relatives and friends who wish to come to the United States. Moreover, postal money orders are purchased, not because of suspicion of banks, but because of a preference for a bill of exchange, when the sender intends to return to his native country. (6) Harm would be done to the South and West by removing money from the place of accumulation. (7) Savings banks ought not to be used to bolster up an artificial system of note issues and save banks from loss through a depreciation of bonds. (8) It is unwise to enact legislation until the monetary commission has presented its report, in all probability to contain a comprehensive banking measure. Our monetary system is already marred by patchwork legislation.

There were practically three parties in the contest in the Senate: (1) Those who wished to use the deposits for the purchase of two-per-cent government bonds; (2) those who wished to keep the funds in the banks in the territory wherein they originated, and (3) those who opposed any scheme on the ground that it was unconstitutional.

In 1909 a bill for the establishment of postal banks was discussed in the Senate but made little progress; in Jan., 1910, it was reintroduced and passed the Senate. A substitute bill later accepted by the Senate, forty-four to twenty-five, passed the House by a vote of 195 to 101, all the Republicans and twenty-two Democrats voting in favor. Apart from arguments for and against the general question of expediency, the chief point of difference lay in the use of the funds. The Senate, under the leadership of Sen. Root, insisted that provision should be made for the investment of the savings funds in government bonds, on the ground that the law would be unconstitutional unless the use of post offices as savings institutions was made an incidental function of the power of the government to borrow. This view prevailed and a compromise was reached whereby the funds may be divided, a part going to the banks and a part, under certain contingencies, to the Federal Government.

The bill as finally enacted and approved, June 25th, provides that: (1) An administrative board for the establishment and regulation of postal depositories be created consisting of the postmaster general, secretary of the Treasury, and attorney general. This has power to designate the offices which shall be depositories. (2) Deposits may be made by any person ten years of age and over in sums of not less than one dollar, for not more than $100 in any one month, and to a total amount of not more than $500, exclusive of accumulated interest. On such deposits two per cent interest is allowed. For amounts less than one dollar, postal savings stamps may be purchased in multiples of ten cents, which may be subsequently converted into a deposit. (3) The funds thus received by the depositories are, subject to certain limitations, to be deposited in local banks, including both national, state, and savings banks, and trust companies doing a banking business and subject to state supervision and examination. In return the banks are to pay interest of two and one quarter per cent. Moreover, the banks must give security in public bonds. Funds are to be apportioned to the banks in the locality in proportion to the capital and surplus of the several institutions, but the amount placed in any one bank cannot exceed its capital and one half the surplus. If no bank in the town is selected, or if the established bank does not wish to accept the deposits on the terms provided, the deposit is to be made in the bank most convenient to the locality, and if the deposit is not made within the state, it must be made with the Federal Treasury. Five per cent of the postal deposits must be kept by the treasurer of the United States, and thirty per cent may be withdrawn from the local banks for investment in securities of the National Government on direction of the President when, in his judgment, "the general welfare and interests of the United States so require." (4) A depositor may exchange his deposits in sums as low as twenty dollars for United States bonds, payable in one and redeemable in twenty years, bearing two and one half per cent interest. Such bonds, however, may not be issued when there are other bonds outstanding subject to call, or when provision has been made by special enactment for the issue of new bonds. (5) For postmasters of the fourth class additional compensation not exceeding one fourth of one per cent of the deposits is provided, but for other postmasters no increased allowance is granted. (6) To carry the act into effect $100,000 is appropriated. Owing to the limitation of the appropriation granted to establish the system, it is not intended that many post offices at the outset will be authorized to receive deposits. There are technical difficulties to be settled, as for example, the method of making and acknowledging a deposit, whether by a pass book, punched card, or certificate; the place of withdrawal, whether at the original point of deposit or elsewhere as well; and the selection of banks entitled to receive deposits from the depositories.

In Sept. it was announced that 566 postmasters had asked to be designated as depositories, and that 1,100 banks desired to receive postal savings funds. The largest demand was from Pennsylvania which had requests from forty-five postmasters; Minnesota, 46; Ohio, 49; Illinois, 33, and Wisconsin, 25.

Savings Insurance in Massachusetts Banks.—In Massachusetts there is about $1,350,000 of insurance in force in the insurance department of the Whitman Savings Bank and the People's Savings Bank of Brockton. The steady growth of this movement is evidenced by the fact that the report just issued by the insurance department of the People's Savings Bank of Brockton, covering receipts for the month of Sept., 1910, shows that during that month there was received from the policy holders as premiums $2,479 as against $1,780 for the month of Sept., 1909—a gain of 39.3 per cent. The report of the insurance department of the Whitman Savings Banks shows premium receipts received during Sept., 1910, of $2,559 as against $1,820 for Sept., 1909—a gain of 40.6 per cent. During the year the Gloucester Savings Bank and the Beverly Savings Bank have become agencies for savings bank insurance; and the Fitchburg Savings Bank, the Cambridge Savings Bank and the Five Cent Savings Bank of Newburyport, all have under consideration the establishment of insurance departments.

During the last year the number of agencies in manufacturing establishments has more than doubled. Over fifty new agencies have been established since Jan. 1, 1910. Among these are the Boston Woven Hose & Rubber Co., Cambridge; the American Rubber Co., Cambridge; A. E. Little & Co., Lynn; Isaac Prouty Co., Spencer; Stevens-Duryea Co., Chicopee Falls; Walter Baker Co., Milton; and the Lancaster Gingham Mills, Clinton.

The actual amount of insurance written by the savings bank is, however, only a small part of the actual accomplishment of the savings bank insurance movement, for since its inauguration the premium rates of the leading industrial insurance companies have been reduced, on an average, about twenty per cent, the first large reduction having been made as of Jan. 1, 1907, after the plan was submitted to the legislative recess insurance committee of Massachusetts; the second as of July 1, 1909, after the system had been put into successful operation.

This reduction it is estimated may result in an annual saving to the wage earners of Massachusetts alone of about $1,500,000, for the amount of industrial insurance premiums collected by the companies in Massachusetts was in 1909, $8,579,054. A relatively small part of the premiums of that year had the benefit of the reduced rate, but as the average life of an industrial policy is less than four years, it is calculated that the saving to the working people, resulting from this reduction in rates in Massachusetts, will, in a few years, rise above $1,500,000 annually.

The saving in Massachusetts represents, however, only a small part of the saving to the working people of America from the reduction which the Massachusetts movement has secured. The total industrial premiums collected in the United States in 1909 exceeded $93,000,000. The 20 per cent reduction in rates on this volume of insurance, it is estimated, might result in a saving of $20,000,000 a year to the wage earners of the United States.

Currency Associations and Emergency Circulation.—Under the Aldrich-Vreeland Act of 1908, two methods were provided whereby banks may issue additional circulation in case of emergency.

(1) Any individual bank may issue additional notes by the deposit of approved state, county or municipal bonds, up to ninety per cent of the value of the bonds.

(2) National banks, not less than ten in number, lying in a single state or in contiguous parts of adjoining states, with an aggregate capital and surplus of $5,000,000 may form a voluntary association, known as a National Currency Association. To these associations is given power to take out, under the direction of the Secretary of the Treasury, additional circulation, based upon the deposit of securities of a general character, including commercial paper, to the extent of 75 per cent of the cash value of such securities or commercial paper, or upon the deposit of state, county, or municipal bonds, to the extent of 90 per cent. In case of issue on commercial paper, the total additional circulation cannot exceed more than 30 per cent of the capital and surplus, and for this additional circulation all of the banks belonging to the association are jointly liable. The total amount of such emergency circulation is limited to $500,000,000, and in order to prevent a permanent inflation, the notes are subject to a tax of 5 per cent for the first month of issue, and of 1 per cent increase for each additional month outstanding until a maximum of 10 per cent is reached.

The object of the law was to relieve, if possible, any exceptional stringency in the money market and thus lessen the danger of a panic. During the years 1908 and 1909 but little interest was shown in the formation of associations, due primarily to the fact that no emergency arose, and because of objections to various features of the law. In brief, these objections may be summarized as follows:

(1) No express provision was made whereby a bank which had once entered into an association could resign, and by a ruling of the Treasury Department this privilege was denied. A bank even after retiring its own emergency circulation, could not withdraw from the joint liability.

(2) The definition in the law of commercial paper was not in harmony with banking practice in the United States. Under the act, commercial paper is defined as "only notes representing actual commercial transactions, which when accepted by the association shall bear the names of at least two responsible parties, and have not exceeding four months to run." In the United States, trade bills frequently do not run to maturity, and acceptances as issued in European banking operations are relatively rare. In some cities banks hold notes in large amounts which have been bought from note brokers, and these notes bear only the names of the maker. Moreover, many loans are made for a longer period than four months in order to avoid a note-broker's commission.

(3) The emergency tax is so high that no relief is afforded for the normal stringency in the autumn due to crop-moving, and in case of panics would be of little service except in cities where loans were inflated through an unhealthy speculative activity.

(4) There was a discrimination between commercial paper as compared with bonds, since under the law, a bank, acting in its individual capacity, may obtain by the deposit of bonds, circulation equal to 90 per cent of the deposit, while under a pledge of commercial paper, it can obtain only 40 per cent.

(5) In the management of a currency association each bank, no matter its size, is given an equal voice, thus putting the larger banks at the mercy of less important institutions.

(6) As the Secretary of the Treasury must pass judgment upon the securities which are submitted by the bank as basis for the additional note circulation, there is danger of discrimination. Owing to the great variety of securities in use, the law may work in a perfunctory manner and result in favoritism to large financial institutions.

(7) The emergency notes have but a limited use; they cannot be employed to settle clearing-house balances, nor are they, any more than ordinary bank notes, reserve money. They may, however, be absorbed by state banks and trust companies for reserves; and, in those cities, as Chicago, where national banks are in the minority, if accumulated in large sums, might prove a source of threatening danger to the national banks when called upon to redeem them.

In July, 1910, Sec. MacVeagh, of the Treasury Department, revived interest in the organization of associations, basing his plea on the ground that such action was more desirable in a time of financial calm than under panic conditions; if properly exercised, it would be likely to prevent emergency; he minimized the use of these associations in emergency, and magnified the importance of their influence in preventing emergency.

The banks in New York received this suggestion with approval, and on July 29th formed a currency association. Their action was followed by other cities. The reasons for this sudden change of position were not entirely clear. Some thought that the most acute observers of financial conditions feared an abnormal stringency in the autumn, and believed that under cover of the secretary's suggestion it was advisable to be prepared for the worst; others, and in particular bankers, held that it was desirable to meet the wishes of the Treasury in a spirit of courtesy and also to show to the country that the banking interest would not oppose congressional legislation by obstructive tactics. Undoubtedly, an important factor of influence was the disposition of the Treasury Department to give a more liberal interpretation to the law. According to rulings of Sec. MacVeagh, a bank may withdraw from an association with the approval of the secretary and the consent of the management of the association, provided that at the time of withdrawal there be no unredeemed emergency notes. It is also decided that the indorsement of a bank, holding a business note with but a single name, will convert the note into two-name paper and thus satisfy the law. In brief, commercial paper includes all notes entered into for carrying on a *bona fide* business, which are discounted at banks and represent actual commercial transactions. Practically only accommodation paper is barred out.

These and other questions in dispute are officially interpreted in a circular of the Treasury Department issued Sept. 16th. By Nov. 1st, eight currency associations had been organized for Washington, Boston, New York, Philadelphia, Louisiana, Chicago, Twin Cities, and St. Louis.

Legislation.—Excepting the postal savings depository law, there has been no Federal legislation affecting banks or the currency. The need of currency legislation is regarded as pressing, but pending recommendations from the monetary commission, Congress remains inactive. If this commission does not report measures in the near future, it is possible that efforts will be made to amend the Aldrich-Vreeland Act by (1) defining more clearly the terms of organization and dissolution of clearing-house associations; (2) defining commercial paper; and (3) reducing the tax on emergency notes.

Currency Changes.—Owing to the inadequate supply of notes of small denominations the Treasury Department has determined, under the act of March 4, 1907, to issue legal tender notes in denominations of $1. Only outstanding notes of $20 and upward are to be so converted.

The Treasury Department has also proposed that the paper currency be reduced in size from 3.04 inches wide by 7.28 long, to 2½ inches wide by 6 inches long. It is estimated that such a reduction would result in a saving of $612,000 a year. The national banks, however, are not disposed to receive this suggestion favorably, as it would necessitate, if bank notes were made to conform to the new measurements, the abandonment of all the old plates and the expense of preparing new ones. If the present bank notes are retained there would be much inconvenience and additional labor in handling two sizes of paper money.

State Legislation.—*Kentucky* has passed an act authorizing the formation of corporations to do a trust, banking, and title insurance business to be composed of at least thirteen persons. The capital of such corporations must not be less than $150,000; at least one tenth and not more than one third of the capital is to be used in the business of real estate title insurance, and one half of the remainder in trust and banking business. A bill passed by the legislature, authorizing the examination of state banks, was vetoed by the governor, but the Secretary of State proposes to introduce examinations in order that banks may receive postal deposits.

In *Maryland* new legislation provides for the appointment of a bank commissioner by the board of public works to serve for two years; the commissioner shall not engage in any other business and shall not be an officer in any bank. His duties are to visit at least once a year each state banking institution; to act as a temporary receiver in case of failure of any such institution; to make an annual report, and suggest amendments to banking laws. Each bank and trust company is to make to the commissioner not less than five reports each year.

Massachusetts has strengthened its savings bank law, prohibiting unauthorized foreign corporations from transacting business in the state. The bank commissioner is authorized to bring proceedings against delinquent corporations and individual bankers under his supervision. The method of liquidation and conditions for resumption of business are more precisely defined. It is also enacted that the board of investment of a savings bank at each annual meeting of the trustees shall submit a complete written statement regarding loans, securities, etc.; and that the auditing committee appointed by the trustees shall make a thorough examination and report on assets and liabilities of the bank under the personal supervision of an expert accountant. The trust company law is amended by the requirement that every trust company shall maintain a reserve equal to 15 per cent of the aggregate deposits, exclusive of savings and time deposits, and that trust companies in the city of Boston shall have a reserve of 20 per cent.

In *New Jersey* it is enacted that no person or corporation shall engage in the business of transmitting money to foreign countries unless authorized by the commissioner of banking and insurance, and that the applicant must be a citizen of the United States and give bonds.

In *New York* a law was passed providing for the stricter supervision of private bankers. Private bankers receiving money on deposit for transmission abroad are required to deposit cash or approved securities with the state comptroller. The special object of the legislation is to safeguard the money of immigrants. The constitutionality of the law has been questioned, and litigation will be carried to the Supreme Court of the United States. New York also amended the law relating to reserves, by providing that time deposits not payable within thirty days and represented by certificates, may be excluded in the computation of each reserve required against deposits.

Rhode Island amended her savings bank law by requiring the trustees of banks to appoint an auditing committee, to act with a certified public accountant. A penalty was also provided for delay in making returns.

Virginia enacted that no bank hereafter organized shall establish branch banks, unless authorized by the corporation commission. The liability of any person or corporation borrowing from a bank shall not exceed 25 per cent of the capital and surplus, unless authorized by the board of directors. The law with regard to examination of banks has also been amplified; and private banking, except to those engaged in business prior to Jan. 1, 1910, is prohibited.

National Monetary Commission.—The work of this commission, so far as disclosed to the public, has been the publication of a large number of reports issued as Senate documents and prepared by experts outside of the commission, on the banking systems of different countries in Europe, various phases of banking in the United States, and the discussion of banking operations. These may be summarized as follows: Three reports on banking in Canada, two on banking in England, three on banking in France, six on banking in Germany, two on banking in Italy, and one each on banking in Switzerland, Sweden, Belgium, Russia, Austria-Hungary, Holland, Japan, and Mexico; one on the history of the First and Second United States Banks, three on state banking, four on the national banking system. In addition, reports have been made on the use of credit instruments in payments in the United States, seasonal variations in the demand for currency and capital, bank loans and stock exchange speculation, clearing-house methods, the independent treasury system, bank acceptances, the discount system in Europe, the credit of nations, the fiscal systems of England, France, Germany, and the United States, monetary and banking laws of the United States, the foreign balance of the United States, and three volumes of statistics.

A Central Bank.—The discussion as to the advisability of the establishment of a central bank has continued, but the plan for a separate institution, which might compete with existing banks, has not met with much favor. There is fear of political control or dominance by special financial interests. Pres. Taft, who was thought from his speech in Boston in 1909 to favor such an institution, was reported in June of that year as *not* in favor at the present time. Criticism, however, has been ill-defined since no clear-cut proposition as to the character of such a bank has been put forth. There is, however, an increasing conviction that some sort of a central organization is necessary for purposes of note issue and control of reserves. As yet (Nov., 1910) the National Monetary Commission has not reported any banking measures, but there is a general belief that the commission is committed to a plan for a central institution. Pending the report of a definite project, discussion has been largely academic or devoted to suggestions as to possible methods of correcting existing evils. On Nov. 11th–12th a conference was held by the New York Academy of Political Science to discuss the currency question, at which members of the National Monetary Commission were present. The general trend of opinion was in favor of a central bank.

Guarantee of Bank Deposits.—There has been no additional legislation during the year. In Kansas, Judge Pollock of the United States Circuit Court issued (Dec., 1909) a temporary injunction to restrain the enforcement of the Kansas guarantee law on the ground that it was unconstitutional, since it conferred special privileges upon certain classes. May 20th, Judge Hook of the United States Circuit Court of Appeals vacated this order and the question of constitutionality will be carried to the Federal Supreme Court. The same is true of the Oklahoma and Nebraska laws. In Texas the guarantee system which the legislature enacted, May, 1909, went into operation Jan. 1st. The state bank commissioner of Oklahoma announces that the guarantee of deposits in state banks has resulted in largely increasing the deposits in the state banks of Oklahoma, as follows:

Deposits in state banks, Feb. 29, 1908	$18,000,000
Deposits in state banks, Jan. 31, 1910	50,000,000
Deposits in national banks, Feb. 14, 1908	38,000,000
Deposits in national banks, Jan. 31, 1910	43,000,000

Number of state banks in 1908	470
Number of state banks in 1910	668
Number of national banks in 1908	312
Number of national banks in 1910	219

Ninety national banks during the two years were converted into state banks or liquidated, and four state banks were converted into national organizations. In a letter published in the New York *Times*, Aug. 6th, the commissioner replied to the criticisms made upon the system, and declared that the plan was working satisfactorily. In particular he mentioned the experience of the Columbia Bank & Trust Company which failed, Sept. 28, 1909, with liabilities of over $3,000,000. The depositors have been paid in full. A valuable article on the whole question has been written by Thornton Cooke, entitled *The Insurance of Bank Deposits in the West*, published in the *Quarterly Journal of Economics*, Nov., 1909, and Feb., 1910. The author concludes after a study of the experience of Oklahoma that (1) there is need of greater assurance of the safety of deposits than is afforded by mere inspection and supervision; (2) the state cannot afford to pay deposits in full as soon as a bank closes; (3) the insurance of bank deposits assists the growth of bad banks as well as good; (4) that the risk assumed on a single bank cannot be limited. An indirect result of guarantee legislation in the West has been the enactment of stricter banking laws.

In Wisconsin a special committee on banking, Jan. 15, 1910, made a report on the subject of additional security for depositors. A brief review of the experience of other states is given with the conclusion that a guarantee law invites men of inferior ability into the banking business. As the success of the system had not yet been proved and there were doubts as to its constitutionality, no legislation was advised.

The Money Market.—Early in the year there was an unfavorable trade balance; imports were heavy with danger of large gold exports impending. The bank returns of Jan. 31, 1910, indicated a great expansion of loans, amounting to $389,000,000. For this the banks of New York were not responsible, as the latter institutions showed a decrease of $72,000,000. The next returns under date of March 29th, were marked by a still greater expansion of credit, the largest in the history of the national banking system. This expansion was accompanied by declines in bank reserves in many western states. Some relief was secured through a fall in the value of securities, resulting in the sale of bonds abroad. For the fiscal year ending June 30, 1910, the excess of exports of merchandise over imports was only $187,000,000, as compared with $351,000,000 in 1909, and $666,000,000 in 1908. From the reports of banks made to the comptroller of the currency, July 1st, it appeared that loans had been excessively expanded in the West, attributed in a large measure to speculation in lands. Speculation in improved lands was especially active in Illinois, Missouri, Iowa, and the northwestern states; there was an increase in farm mortgages and the demand for credit was so great that banks in some sections demanded seven and eight per cent. Pressure was exerted to force the banks to strengthen their position, and a slight improvement was shown when the next returns were made on Sept. 1st. As the Treasury deposits in the banks have at no time been large, averaging about $40,000,000, no relief in case of a monetary stringency could be expected from that source. In Oct. the surplus reserve of the New York banks reached the low limit of $5,000,000.

Cotton Bills of Lading.—The failures in April of two Southern cotton firms, operating on a large scale, disclosed the use of fraudulent cotton bills of lading, resulting in a heavy loss to English firms and spinners. This led to a demand by English bankers that American bankers guarantee cotton bills of lading. It was held unreasonable that a foreign spinner or banker should take all the risk of paying for cotton at the place of production where he could not protect himself against frauds, and only proper that such transactions be financed by institutions on the spot acquainted with local credit. For several years the need of a uniform bill of lading applicable to all merchandise, has been under discussion by bankers and railroad managers, and in one form or another a measure to secure such ends has been before Congress. In Jan., 1910, a bill, known as the Stevens Bill, to enforce a certain amount of liability upon the carriers, was introduced in the House of Representatives. Under this measure local freight agents were made responsible for freight bills in the same way that passenger ticket agents are held liable for every ticket intrusted to them. The bill, however, applied only to interstate commerce and would not protect merchandise passing into export from ports of the same state where the shipment originated. The railroads opposed the bill on the ground that they ought not to be held responsible for acts of minor agents and clerks, and insisted that in the case of the cotton bills, for example, they were in no sense liable, as the bills were bogus. After the failures referred to, the passage of the bill was more urgently demanded by shippers of grain and cotton, since English importers of cotton threatened not to accept the customary bills by which cotton shipments had been previously financed. If the threats were carried into execution the cotton crop would move more slowly, prices would drop, and the foreign exchange market be deranged. Bankers on their side claimed that they could not guarantee cotton bills; the national banking laws would not permit such guarantee, and even if it were permissible, it was impracticable for a small local bank in the interior to guarantee the signature of a railroad agent, attached to a bill involving the shipment of a large amount of cotton. The difficulty was aggravated by the growing use of through bills of lading employed in through routing from interior points. Under this practice a bill may arrive long in advance of cotton or grain, and the European banker has no assurance where the cotton or grain is. Oftentimes there is no signature, the bill of lading bearing only initials. The railroad which issued the bill is liable only while the goods are in his possession, while the subsequent carrier has signed only contingently. It was also urged that railroads were at fault in using bills of lading for cotton to be shipped by certain steamers, before the cargoes were received: so-called fraudulent cotton bills of lading were obtained from employees of a railroad simply on the assurance that the cotton was on its way, and it was held that in these circumstances railroads evaded their responsibility in claiming that they should not be held responsible for acts of their agents. The Stevens Bill passed the House with only two dissenting votes, but in the Senate action was deferred until the present session.

In July, European bankers met in conference in London and resolved that in case of drafts drawn against cotton after Oct. 31st they would decline to accept, unless the genuineness of the bill of lading as to signature and as to possession of the cotton was guaranteed by the exchange buyers. American bankers declined to accede to these terms. The railroads, however, July 19th, agreed to issue validation certificates whereby the railroad certifies that the agent's signature is valid and that the cotton has been actually received by the railroad for transit. This plan nevertheless was not acceptable to the foreign bankers; they insisted upon a banker's guarantee, and for several weeks during the summer there appeared to be a deadlock. The validation of cotton bills of lading was put in operation by the railroads, Sept. 1st, and shortly afterwards a representative of English bankers visited New York in order to confer with American interests. Among the proposals was the suggestion that European banks agree to finance cotton under existing arrangements until Dec. 31st, and that thereafter bills of lading be insured by surety companies. The charge for such insurance would probably be about six cents per bale. There is, however, considerable dissatisfaction with this solution in the south on the ground that the charge will be a tax on the producer, reflects upon the integrity of southern merchants, and discriminates against cotton as compared with other merchandise exported. To such a tax the Liverpool Cotton Association is also opposed. In Texas a law affecting cotton bills of lading went into effect Nov. 1st, whereby agents receiving goods and issuing bills of lading must make affidavits that they have executed and issued the bills in question. This act makes the railroads responsible for the cotton for which bills of lading are issued.

Statistics. — As illustrating the changes in monetary operations and the banking system over a period of years the following additional statistics have been condensed from the report of the national monetary commission, compiled by A. Piatt Andrew, formerly expert of the commission, now Assistant Secretary of the Treasury (Sen. Doc. No. 570, 61 Cong., 2d sess.).

1. Total stock of moneys in the United States (in millions):

	1890.	1900.	1909.
Total money	$1,685.1	$2,339.7	$3,406.3
In treasury	255.9	284.6	300.1
In reporting banks	488.1	749.9	1,452.0
Not in treasury or banks	941.1	1,305.2	1,654.2

The per capita amount of money outside of the Treasury: 1890, $22.82; 1900, $26.94; 1909, $34.93.

2. The amount of each kind of money in 1900 and 1909 was as follows:

	1900. Millions.	1909. Millions.
Gold coin, including bullion in treasury	$1,034.4	$1,642.0
Standard silver dollars	490.1	564.1
Subsidiary silver	82.3	159.4
Treasury notes of 1890	76.0	4.2
U. S. notes	346.7	346.7
National bank notes	309.6	689.9

3. The amount of each kind of money in circulation was as follows:

	1900. In Millions.	1909. In Millions.
Gold	$610.8	$599.3
Silver	142.1	204.3
Gold certificates	200.7	815.0
Silver certificates	408.5	477.7
U. S. notes	314.0	340.1
National bank notes	300.1	665.5
Miscellaneous	79.0	4.2

4. The relation of gold to other forms of money may be indicated as follows:

	1900. In Millions.	1909. In Millions.
Gold coin and bullion	$1,034.4	$1,642.0
Other money	1,305.3	1,764.3
Per capita, gold	$13.55	$18.46
Per cent of gold to other money	.79	.93

5. Number and capital of commercial banks:

	1890.	1900.	1905.	1909.
Number of national banks	3,484	3,732	5,668	6,893
Number of state banks	2,101	4,369	7,794	11,319
Number of trust companies	149	290	683	1,079
Number of private banks	1,344	989	1,028	1,479
	Millions.	Millions.	Millions.	Millions.
Capital of national banks	$854.6	$877.7	$1,205.0	$1,521.1
Capital of state banks	240.6	328.4	534.2	568.7
Capital of trust companies	105.2	239.5	524.4	714.4
Capital of private banks	50.5	22.5	29.4	37.9

6. The number of inhabitants to each commercial bank:

	1890.	1900.	1909.
New England	7,176	8,537	9,527
Eastern States	11,162	10,751	8,121
Southern States	18,200	13,984	5,137
Middle Western States	7,761	6,640	3,681
Western States	2,557	3,106	1,573
Pacific States	6,233	7,206	2,828
Island possessions	......	38,500	296,158

7. Individual deposits (millions):

	1900. Millions.	1905. Millions.	1909. Millions.
National banks	$2,458.1	$3,783.7	$4,826.1
State banks	1,266.7	2,365.2	2,466.9
Trust companies	1,028.2	1,980.9	2,835.8
Private banks	96.2	127.9	193.3
Savings banks	2,389.7	3,093.1	3,713.4
Total	$7,238.9	$11,350.8	$14,035.5

From returns made to the comptroller of the currency (annual report of Dec., 1910) additional banking operations are summarized as follows:

8. Savings banks, 1910:

	New England.	Eastern.	For all U. S.
Number of banks	423	217	1,759
Number of depositors	3,347,953	3,925,462	9,142,908
Amount of deposits	$1,325,769,145	$1,919,393,101	$4,070,486,246
Average per depositor	$396	$488.96	$445.20

	1890.	1900.	1910.
Number of depositors	4,258,893	6,107,083	9,142,908
Deposits	$1,525,000,000	$2,450,000,000	$4,070,080,536
Average per depositor	$358.03	$401.10	$445.20

9. Banking power of the United States:

Number of banks	27,263
	Millions.
Capital	$1,957
Surplus	1,980
Deposits	15,859
Circulation	675
Total	$21,049

10. From *Trust Companies of the United States* (1910 edition) the following is condensed. Trust companies:

	1909.	1910.
Number	1,504	1,527
	Millions.	Millions.
Resources	$4,610	$4,610
Capital	415	446
Surplus, etc	503	520
Deposits	3,424	3,308

(See also XIV, *Economic Conditions in 1910*.)

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INSURANCE

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LIFE INSURANCE

In 1909 the life-insurance business began its return to normal conditions, and by the close of the year had practically recovered from the slump occasioned by the Armstrong investigation and the financial and commercial depression of 1907–08. During the year 189 companies, whose business is recorded in the last issue of the *Insurance Year Book*, wrote $1,655,000,000 of new business (12.7 per cent more than in 1908), an amount larger than for any year since 1905. The total regular insurance in force at the close of 1909 amounted to $12,513,000,000, or 5.5 per cent more than in 1908 ($11,850,000,000). The distribution of American and Canadian life-insurance organizations to their policyholders during the year, according to the computations made by *The Insurance Press*, aggregated the enormous total of $532,500,000. Of this huge sum, $366,500,000 represents claims paid in the United States and Canada, while $166,000,000 represents the "estimated total of the amounts paid by regular companies in dividends to policyholders for surrender policies, to annuitants, and on claims in foreign countries." The other items in the business for the year 1909 all exceeded those of the previous year; see accompanying table.

Lapses and Liens.—The return of prosperity in business has had the wholesome effect in life insurance of reducing losses through lapses, and also of preventing much increase in the amount of liens against policies through policy loans. According to the reports of the New York Insurance Department, which applied to about ninety per cent of the insurance in force, the increase of disbursements for surrendered, lapsed, and purchased policies amounted to $3,059,059 in 1909, as compared with an increase of $14,543,681 in 1908. The ratio of terminations by surrender and lapse of twenty-nine leading companies to the mean policies in force amounted in 1909 to only 5.31 per cent, as compared with the last ten year average of 7.3 per cent. The same reports show that loans on policies increased in 1909 by about $35,000,000, as compared with $55,450,000 in 1908, $72,558,325 in 1907, and $27,279,826 in 1906. In commenting upon the significance of these figures, *The Insurance Press* (June 15, 1910, on "Life-insurance Distributions in 1909") gives the following summary:

> In the past three years the appreciation of the value of life insurance policies for the protection, through loans, of commercial credit and the alleviation of temporary embarrassment in minor affairs was a feature of the business sufficient to require the cognizance of executives of companies, who uttered warnings against allowing the loan liens to remain unpaid. The records of many

LIFE INSURANCE

	No. of Companies	Premium Income.	Other Income.	Total Income.	Total Expenditures.	Total Assets.	Total Liabilities.	Reserve.	New Business.	Insurance in Force.	Surplus.
1909. .	189	565,228,893	182,798,999	748,027,892	505,360,483	3,643,857,971	3,170,492,711	3,028,542,773	1,655,899,059	12,513,125,180	540,783,674
1908. .	171	545,858,410	158,071,739	703,930,149	467,675,546	3,380,294,090	2,939,482,079	2,828,657,091	1,468,934,726	11,850,032,581	474,002,778
1907. .	160	533,077,447	145,579,148	678,656,595	438,787,411	3,052,732,353	2,736,329,746	2,650,949,063	1,345,147,040	11,486,115,758	316,439,451
1906. .	138	526,594,898	140,590,694	667,185,592	426,861,363	2,924,253,848	2,557,049,863	2,473,124,563	1,450,829,425	11,253,194,077	367,203,985
1905. .	112	515,996,835	126,061,695	642,058,530	411,850,689	2,706,186,867	2,372,573,020	2,295,289,818	1,725,747,206	11,054,231,621	333,613,847

of the companies have indicated large repayments, but at the close of 1909 the outstanding loans of policies amounted to $396,993,588 for the companies that reported in New York, reducing the protection of $11,110,457,173 of ordinary insurance to $10,713,463,585.

Dividends.—In the matter of dividends paid to policyholders the year 1909 compares favorably with the preceding year. In its summary of this item of life-insurance disbursements, *The Insurance Press* (June 15, 1910) gives the following:

> For other living policyholders, those who have been able to hold on in rough and easy places and maintain their insurance protection, the record of dividends paid in 1909 by the companies that reported to the New York department showed an increase of $9,195,734, compared with an increase of $7,730,107 in 1908. Besides increase of the amount paid, the item of dividends due and unpaid showed an increase of $1,361,864. The account of dividends declared on or apportioned to annual and deferred dividend policies in 1909, and payable in 1910, was for $66,632,494, an increase of $23,245,611. The amounts set apart, calculated or provisionally ascertained upon deferred dividend policies totaled $267,359,334, at the close of 1909, an increase of $74,832,163, compared with an increase of $51,096,210 in 1908.

Promotion of New Companies.—In view of the promotion of many new stock companies during the last few years, many of which involved stock-selling schemes in conjunction with the sale of policies, a considerable number of states have, since 1907, sought to regulate the matter by enacting legislation to the effect that "no officer, agent, solicitor, or representative of the company shall give, sell, purchase or offer to give, sell or purchase, as inducement to insurance, or in connection therewith, any stocks, bonds . . . or any dividends or profits to accrue thereon, or anything of value whatsoever not specified in the policy." The promotion of such new companies, many of them belonging to the purely stock-selling variety, continued during 1909. Many of these companies have already failed or retired, and many others are due to travel the same path. During the last four years no fewer than twenty-three life-insurance companies have failed or retired, and at a recent date thirteen were in the hands of receivers.

The Year 1910.—Unfortunately, no comprehensive statistics are available to show the progress of life insurance during the first ten months of 1910. The companies began the year with the brightest prospects, and with apparently little to hinder their activity. It is true that the business suffered by a needlessly large number of newly organized companies, many of them insufficiently financed or poorly managed, but it is believed that within the near future many, if not most, of these new companies will be weeded out, and that only the fit will survive, a process which will be hastened by the attitude of the state insurance departments and an aroused public opinion. Special returns, sent by most of the companies, to the *Insurance Field* show very satisfactory increases in new business for nearly all the companies for the first six months of 1910. As summarized by this journal, the data show "some very healthy gains in the business as a whole, and, based on these figures, the returns for the year 1910 should show a marked increase in writings."

Insurance Legislation.—In 1910 the State of New York repealed section 96 of the Armstrong Code, which limited the amount of insurance that certain companies could write in any one year (chapter 326, section 96). The new business of companies possessing from $50,000,000 to $1,000,000,000 of insurance was limited for all companies, except those two thirds of whose insurance was industrial, according to a graded schedule. For companies with business in excess of $1,000,000,000, the amount of new business for any one year was limited to $150,000,000, thus on the one hand vitally affecting two large companies, and on the other relieving small companies from the strenuous competition of the very large ones. As written, the law was clearly open to objections, and scarcely any part of the Armstrong Code was so vigorously denounced as this one. The law, it was charged, was an unfair discrimination in favor of large companies not doing business in New

York State, and an equally unfair discrimination in favor of the two largest industrial companies, one of which exceeded $150,000,000 in ordinary life policies in 1909. It was also considered arbitrary in character, and as unwisely limiting the legitimate activities of one of the noblest of human undertakings.

The new law (chapter 697, page 2012) will be fairer to all companies concerned, and permits the large life-insurance companies to write from year to year an increasing percentage of business with a graded reduction of expenses. Besides rearranging the schedule of limitations as they existed in the old law, the new law provides that any company with over $600,000,000 of insurance cannot write more in one year than $150,000,000, "or it may increase its new business over the largest amount issued in any one of the three years immediately preceding, in the proportion in respect to said amount which the difference between twenty-five per centum of its net renewal premiums, computed according to the bases of mortality and interest assumed in calculating its liabilities, and its total expenses for such preceding year, after deducting from said total expenses—(1) the items of first-year expenditure specified in the first sentence of section 97 of this chapter; (2) its actual investment expenses (not exceeding one fourth of one per centum of the mean invested assets); and (3) taxes on real estate and other outlays exclusively in connection with real estate, bears to said net renewal premiums; provided, that in determining the amount of insurance in force and the amount of new insurance issued, industrial policies issued upon the weekly plan, and all premiums on such policies and the expenses in connection with such policies, shall be excluded, etc." By this change the unjust discrimination existing under the original law is eliminated, and while, to quote the president of the New York Life Insurance Company, "the principle of limiting output, after fixing cost, is still retained, the limitations apply impartially to all except industrial business. The new law does not eliminate any provisions which aim at safety or equity or economy or publicity. The state simply relaxes her strangle hold on the throat of this company, and applies a lighter grip to the throats of all companies alike. I hope and believe that reasonable and healthful growth will be possible under the law as it now stands."

It remains to be stated that in 1909 two important general movements in the interests of policyholders developed sufficiently to enlist the active coöperation of life-insurance companies, viz., those for health conservation and uniformity of state laws. At the third annual meeting of the Association of Life-insurance Presidents, held in Washington, D. C., on Jan. 19, 1910, the program consisted of three sections, the first dealing with the problems arising from dissimilarity of state laws and conflict of state practices, the second with health preservation, and the third with the amalgamation of life-insurance companies or the reinsurance of one company by another.

INDUSTRIAL INSURANCE

A Remarkable Growth.—Probably no type of life insurance experienced such remarkable gains during the year 1909 as industrial insurance. As contrasted with the preceding year the number of companies writing this form of insurance increased from nineteen to twenty-one. The amount of insurance written increased from nearly $605,000,000 to over $803,000,000, or the enormous increase of $198,000,000 in a single year, or 32.7 per cent. In 1908 the number of industrial policies aggregated 19,661,147 with a face value of $2,667,378,884, while in 1909 the number of policies had increased to 21,531,007, or 9.5 per cent, and the face value to $2,965,177,180, or 11.1 per cent. The premiums of the companies increased from $145,000,000 to nearly $158,000,000, while the losses paid increased from $39,000,000 to nearly $43,000,000.

By far the most remarkable showing for the year was made by the Metropolitan and Prudential companies. At the close of the year the Metropolitan carried on its books nearly 10,000,000 policies, with a value of over $1,435,000,000. It wrote new insurance for the year amounting to $292,000,000, and received total premiums of over $71,000,000. The Prudential, however, holds first place as regards the increase in its business for 1909, having written industrial business exceeding $359,000,000, or an increase of 66.6 per cent over the business written in 1908. At the close of the year the Prudential carried nearly 9,000,000 policies on its books, valued at over $1,049,000,000, and received total premiums of nearly $59,000,000. It is interesting to note that the industrial insurance companies also increased their ordinary life business very greatly during the year. The Prudential wrote new business, industrial and ordinary combined, amounting to over $486,000,000. This huge sum, approximating the half-billion mark, represents the largest amount of insurance ever written by an insurance company in a single year, in any country. The Metropolitan, it may be added, did not fall far short of this remarkable record of the Prudential, having written a combined industrial and ordinary business amounting to nearly $445,000,000. At present these two giants in industrial insurance carry respectively total policies numbering 8,846,000 and 10,621,000 and valued, in the case of the Prudential, at nearly $1,685,000,000, and in the case of the Metropolitan at nearly $2,042,000,000.

INDUSTRIAL INSURANCE

	No. of Companies.	Insurance Written.	Insurance in Force.		Premiums Received.	Losses Paid.
			Number.	Amount.		
1909...	21	$803,313,730	21,531,007	$2,965,177,180	$157,794,269	$42,795,816
1908...	19	604,878,284	19,661,147	2,667,388,884	144,880,619	39,667,372
1907...	17	575,472,552	18,831,884	2,576,192,198	139,065,145	38,960,072
1906...	19	631,417,769	17,829,046	2,451,177,221	130,215,764	34,864,191
1905...	20	661,097,015	16,869,758	2,309,886,554	119,879,540	32,398,936

FRATERNAL INSURANCE

The statistical exhibit of fraternal insurance, as furnished by the last *Insurance Year Book*, shows remarkable gains for the year 1909. The 645 fraternal orders included in the statistics show insurance in force at the beginning of 1910 of $8,920,716,227, an increase of more than $482,000,000 over the preceding year. The number of certificates in force amounted to nearly 8,000,000, and the amount of insurance written during the year totaled $1,203,403,691. The aggregate assets were over $117,000,000, and the total disbursements exceeded $104,000,000, of which sum $89,899,541 was paid in the form of claims.

Uniform Legislation for Fraternal Insurance.—In the latter part of 1910 the National Convention of Insurance Commissioners secured the ratification by the two branches of fraternal insurance societies in the United States, the "Associated Fraternities of America" and the "National Fraternal Congress," of a uniform bill to be recommended to the legislatures of the several states for the regulation and control of fraternal benefit societies. Fraternal insurance has offered more obstacles to efficient regulation by the state than any other form of insurance. It is therefore a big step in advance to secure the pledge of the two great associations of fraternal orders to give their assistance to the insurance commissioners in seeking to enact a uniform bill into law.

The bill itself may be best described as a compromise, concessions having been made on both sides. Inadequate rates are not increased at once, but this is to be done gradually and expedited through the education of the fraternal membership as to the necessity of such an increase. After 1912 each benefit society, it is provided, shall report to the insurance department an actuarial valuation of its certificates, the minimum basis of valuation to be the National Fraternal Congress table of mortality. This valuation will show a heavy deficiency in many of the societies, because of the inadequate rates now prevailing, and it is therefore further provided that such valuation shall not be considered as a test of financial solvency. A report of such valuation, including an explanation of the system, is to be furnished to the members of the societies, beginning in 1914, with a view to educating them to the need of higher rates. After 1917 each succeeding valuation is "to show a reduction of at least five per cent each three years in any deficiency which may exist. If such a reduction has not been made, and no good reason exists, the insurance department may proceed to cancel the society's license, or begin proceedings for the society's dissolution."

According to the present arrangement each insurance commissioner is expected to introduce the bill in his own state. On the other hand, preparations are now in progress among the fraternal organizations for concerted action in all the states whose legislatures convene this year, with a view to securing the passage of legislation conforming as nearly as possible to the model bill adopted by the National Convention of Insurance Commissioners. To secure united action the National Fraternal Congress and the Associated Fraternities of America have indorsed the bill, and have provided for a special committee of six to take charge of the bill, with power to appoint subcommittees in the various states for the purpose of passing upon any amendments proposed in the legislatures. This action on the part of the two groups of fraternal insurance organizations represents the first instance of concerted action looking forward to the safeguarding of the interests of their enormous membership through the application of statutory regulation and actuarial valuation.

Judicial Decisions.—One other occurrence in 1910 deserves special mention, since it is of vital importance to fraternal benefit societies. The New York Court of Appeals, in the suit of Michael Dowdall against the Catholic Mutual Benefit Association, denied to such societies the right to increase the assessments of their members without reserving the right to do so in a clause in the certificates issued to them when they become members. In another case the Supreme Court of the State of New York enjoined the Supreme Council of the Royal Arcanum from raising the assessments of members in that state without their consent, on the ground that "the society possessed no power in reserve to increase the membership assessments beyond the amount which a certificate holder agreed to pay upon entering the membership, and that the society had no power to deprive such holder of membership of the ensuing benefits of insurance on account of refusal to submit to an increase of assessments." Thus far fraternal orders have avoided the insertion of a clause in the certificates of membership reserving the right to increase assessments, and this rule has been interpreted as making it obligatory hereafter for those operating in New York State to put the reservation clause in membership certificates, or voluntarily relinquish the right to increase assessments after the certificates are once issued. It was further held by the court that amendments to the by-laws of a benefit-insurance association, providing for the cutting down of the benefits of members under their contracts, were void, although the certificate contained a statement reserving the general right to amend. In voicing its opinion on these decisions, *The Insurance Press*, in its issue of June 15. 1910. declares them to be "the most important on the subject of fraternal insurance ever handed down." "Inevitably," this journal continues, "many orders will be dissolved. Others will attempt reorganization, but with little prospect of success. Upon families and individuals will fall losses that cannot be made good, amounting, perhaps, to billions of dollars."

STATISTICS OF FRATERNAL ORDERS

No. of Orders.	Year.	Total Income.	Paid for Claims.	Total Disbursements	Invested and Other Assets.	Certificates in Force.	Amount Written During Year.	Amount in Force End of Year.
570	1905	$95,675,423	$72,551,897	$85,154,054	$64,491,954	6,118,938	$1,026,308,429	$8,150,350,736
590	1906	109,452,736	80,907,670	96,028,068	76,502,396	6,890,564	1,111,906,048	8,136,201,919
543	1907	116,699,392	81,633,093	96,116,276	85,544,461	7,282,416	1,212,382,432	8,079,743,281
547	1908	115,987,941	84,084,080	98,854,809	104,500,471	7,887,365	1,120,569,228	8,438,204,968
645	1909	120,474,074	89,899,541	104,680,773	117,185,401	7,909,626	1,203,403,691	8,920,716,227

FIRE INSURANCE

	No. of Companies and Lloyds.	Total Assets (Exclusive of Premium Notes).	Capital.	Dividends.	Net Premiums.	Total. Income.	Fire Losses.	Losses Paid.	Expenditures.	Stock Companies. United States and Foreign.		
										Risks Written.	Rate of Prem. per $100 Insurance.	Rate of Prem. U. S. Companies Only.
1909	632	$667,605,008	$87,504,299	$31,180,848	$333,372,197	$366,751,426	$188,705,150	$156,038,616	$303,975,730	$33,117,068,129	$1.1223	$1.1418
1908	636	611,752,128	84,704,959	28,655,130	313,329,054	339,068,915	217,885,850	167,354,759	307,223,933	30,232,055,437	1.1444	1.1711
1907	654	566,847,069	88,560,679	26,051,585	317,013,383	342,531,049	215,084,709	147,213,603	282,065,025	30,083,316,378	1.1697	1.1815
1906	632	554,660,897	84,255,590	24,218,434	301,116,409	353,922,994	518,611,800	278,236,980	407,108,568	28,082,307,795	1.1469	1.1702
1905	612	550,166,135	75,643,021	23,293,581	273,795,169	296,645,563	165,221,650	126,446,017	243,780,017	25,559,701,079	1.1679	1.1885

FIRE INSURANCE

A Normal Increase.—During 1909 the fire-insurance business shows a normal increase in the amount of business transacted and premiums collected, and a moderate underwriting profit. The risks written amount to $33,117,068,129, or nearly $3,000,000,000 in excess of the previous year's business. The net surplus of the companies increased $28,374,657, which amount, together with the dividends of $31,180,848, paid to stockholders on capital stock of $87.-504,299, represents the investment and underwriting profits of the year's business. This surplus, however, must be regarded in the nature of a contingency fund to cover the conflagration hazard—the hazard which history has shown must be provided for during the years of normal fire losses in order to insure the financial ability of companies to meet claims when occurring in large numbers through a single conflagration—and should not be regarded as strictly undivided profits. Premium income increased during the year from $339,000,000 to nearly $366,000,000, or nearly eight per cent. Meanwhile, the rates charged by the companies have shown a steady tendency to decline from an average of $1.17 for American companies per $100 of insurance on risks in 1908 to slightly over $1.14 in 1909.

According to the last issue of the *Insurance Year Book*, the admitted assets for 632 companies, exclusive of premium notes, aggregated $667,000,000. This is an increase of nearly $56,000,000 as compared with the financial returns of the same companies for 1909. Premium receipts increased about $20,000,000, while losses paid decreased over $11,000,000. But while this showing is a favorable one, it must be borne in mind that the position of the companies is not yet as strong as it was at the beginning of 1906 as regards capital and surplus. The excessive losses resulting from the San Francisco conflagration have not yet been made up by many millions of dollars, although a considerable portion of the companies' present capital and surplus represents money furnished by the stockholders.

The Fire Losses.—The fire loss for the United States and Canada during the calendar year 1909 aggregated $203,649,200, or $35,000,000 less than during the preceding year, and there has been an absence of any sweeping conflagrations. Of this total the fire-insurance companies paid claims to the amount of $156,000,000, or six and a half per cent less than during 1908, a result believed to have been induced largely by the better business conditions and the improved moral hazard in consequence. Moreover, much sentiment is being aroused everywhere in favor of better construction, the installation of fire-prevention facilities, and the adoption of more stringent building laws and regulations in our cities. During the first half of 1910, as shown by the records kept by the *Journal of Commerce and Commercial Bulletin*, the fire loss of the country has been favorable to the companies, the *Journal* commenting "that the first half of 1910 has been profitable to the fire underwriters, the rates having been fully adequate on the average." Following is a summary of the *Journal's* record of fire losses as compiled by months for the years 1907–10:

	1907.	1908.	1909.	1910.
January	$24,004,000	$29,582,000	$22,735,000	$15,175,400
February	19,876,600	18,489,700	16,131,000	15,489,350
March	20,559,700	16,723,300	13,795,400	18,465,550
April	21,925,909	26,000,000	19,345,300	18,091,800
May	16,286,300	15,181,150	17,360,400	18,823,200
June	14,765,000	19,512,000	14,435,950	13,183,600
July	18,240,150	15,323,750	15,830,900	26,847,900
August	20,248,000	23,123,000	16,423,000	21,570,550
September	11,440,400	21,431,400	15,043,000	11,700,000
October	13,350,250	22,722,850	17,765,200	37,188,300
November	19,122,200	15,834,350	14,808,550	16,407,000
December	15,783,750	14,629,750	19,975,500	....

Mutual Competition.—Several other matters pertaining to the fire insurance business in 1909 and 1910 should be especially noted. In the first place, during these years there has been an unusual amount of promotion of dubious companies, many of which will probably be eliminated in the near future. Much competition from mutual companies has also figured in the business and has tended to the lowering of rates, despite the fact that underwriters generally feel the capital and surplus of many companies to be inadequate in view of the general conflagration hazard which exists in a large number of our cities.

State Regulation. — Another matter of fundamental importance to fire underwriters has been the tendency of legislation to be enacted which seeks to place the control of fire rates in the hands of state authorities. As an example we have the Texas rating law of 1910, which authorizes the state rating board to establish maximum rates on all risks; which prohibits the use of coinsurance clauses in policies unless the consent of the insured for their inclusion is expressly obtained, and which requires the companies to pay the expenses of maintaining the rating board, although there is nothing to show that this board exists for the protection and benefit of the companies. In the same year Louisiana enacted a law (Act No. 219) creating a state insurance rating board. According to the law the companies must furnish schedules of all their rates and whenever the board determines that any rate made by any company in the state is excessive or unreasonable it is authorized to direct the company to publish and file a lower rate, which rate shall be reasonable. Unless set aside by judicial action against the board, along lines provided for in the act, such rates shall be binding on the company, and it shall be unlawful for any company to collect a higher rate of premium. Furthermore, the board is authorized to publish schedules showing the maximum that can be charged by any company doing business in the state and covering all risks within the same.

Coöperation of Companies.—Lastly there has been a distinct tendency during the last year or two to prohibit the coöperation of companies toward efficiency and economy in the inspection of risks, the prevention of fires, and the fixing of rates. In reviewing this phase of legislative activity the *United States Review,* in its issue of Jan. 6, 1910, gives the following summary: "Another part of the outlook is by no means encouraging. Legislation prohibiting the coöperation of companies for the promotion of efficiency and economy in rate making, risk inspection, fire prevention, and property conservation shows no sign of improvement. Litigation for the enforcement of such laws is pending in several states, and the dissolution of the Newark Fire Insurance Exchange as in violation of the common law prohibiting combination in restraint of trade is peculiarly discouraging. The tendency to make fire insurance more costly by piling up the burden of taxation shows no abatement, and policyholders, who complain bitterly of the cost of insurance, show no inclination to assist in the removal of this burden."

CASUALTY AND MISCELLANEOUS INSURANCE

In addition to life and fire insurance there exists a large variety of less important forms of insurance, such as accident and health insurance, employers' liability insurance, corporate bonding, credit insurance, burglary insurance, steam-boiler insurance, plate-glass insurance, etc. For convenience, all of these types of insurance can be grouped under the class of "casualty and miscellaneous insurance," remembering that many companies write the most, or at least a large number, of these kinds of insurance. Space will not permit a detailed discussion of this group, except for the few most important types. In general, it may be said, however, that in recent years the growth of these less important kinds of insurance has been phenomenal, and that the tendency toward the organization of new companies will, in all probability, prove to have been excessive.

To this general statement the year 1909 was no exception. For the sake of brevity we cannot do better than present Edwin W. De Leon's brief summary of the progress of casualty insurance, prepared for the *Insurance Year Book* of 1910. He says:

> The most important development in casualty insurance during 1909 was the unusually large number of new companies organized, partly organized or projected, aggregating thirty-eight in number, with proposed capital of $14,550,000 and surplus of $4,000,000. Ten of these companies were started in southern states, principally in Texas and Georgia; sixteen hailed from the middle western states, Indiana and Missouri leading in number and capitalization. The Pacific Coast contributed two of the number, and the balance were organized in New York and other eastern states. Five companies actually completed their organization during 1909, and commenced operations about Jan. 1, 1910. The combined capital of these companies is $1,110,000, with surplus of $505,754. During 1909, or early in 1910, seven companies now in business increased their capital in the total sum of $2,250,000.
>
> At the close of the year 1909, 175 stock companies were transacting the business of casualty, surety, and miscellaneous insurance in the United States, with combined capital of $59,454,495; total assets of $265,804,030, and net surplus of $59,748,222. Premiums written during 1909 aggregated $77,189,039. Losses paid, excluding expenses for investigation, adjustment, and legal fees, amounted to $31,890,081. Management expenses, including commissions, equaled $40,204,792, and dividends paid totaled $5,320,023.

FIDELITY AND SURETY BONDING

Official Bonds.—The net premiums collected by bonding companies during 1909 amounted to $15,497,251, while the losses paid equaled $4,219,824, thus showing a loss ratio of 27.3 per cent. During the years 1909 and 1910 a number of new types of bonds were issued concerning especially the liability of directors for neglect of duty and the professional competency of architects and certified public accountants. On the one hand, many local associations have been organized in different sections of the country for the purpose of regulating the surety business. On the other hand, the Federal treasury department has adopted a policy of careful scrutiny over the bonds which have been issued for the purpose of guaranteeing the performance of contracts made with the government. As regards United States Government official bonds, the year 1910 also witnessed a rate war, which has led to much demoralization among surety writing companies handling this kind of business.

The business of the eighteen leading fidelity and surety companies for the year 1909 shows the following:

Total assets..................	$52,975,490
Surplus.......................	14,861,161
Fidelity risks in force	2,144,305,148
Surety risks in force..........	1,368,503,672
Premiums received...........	12,682,693
Losses paid..................	3,347,239
Ratio of losses paid and claim expenses to premiums.......	29.7

ACCIDENT AND SICKNESS INSURANCE

The Bureau of Insurance.—In accident and sickness insurance the premiums received in 1909 amounted to $24,794,108, and the losses paid to $9,909,579, the loss ratio thus being forty-four per cent. Throughout the year competition between the companies was severe, and a considerable number of new companies entered the field. Most of the companies, however, are working toward coöperation with each other, and with this object in view there was proposed at the 1909 meeting of the International Association of Accident Underwriters, the formation of a "Bureau of Publicity," which is to have charge of matters pertaining to legislation, publicity, etc. All companies doing a casualty business in the United States, whether members of the International Association of Accident Underwriters or not, may become members of this bureau.

State Legislation.—The chief event of the year 1910 was the passage of the so-called uniform health and accident laws in the states of New York (chapter 636) and Massachusetts (chapter 493). A similar law failed of enactment in Ohio only through a mishap. The accident and health provision law passed in these two states will probably be adopted in many other states in the course of the next few years, especially because the national convention of insurance commissioners last year adopted for recommendation to the legislatures of their respective states a bill for standard provisions in accident and health policies, substantially the same as those embodied in the laws of New York and Massachusetts.

The purpose of the New York and Massachusetts laws is to standardize certain provisions in insurance policies of this class, and to prevent the use of other provisions that have proved to be deceptive and unsatisfactory. According to the New York law, after Jan. 1, 1911, no accident or health policy can be issued or delivered in the state by any corporation authorized to do business in the state unless a copy of the same and the table of rates or manual of risks of the corporation has been filed at least thirty days with the superintendent of insurance; or in case the corporation has been informed in writing by the superintendent of insurance that in his opinion the policy form does not comply with legal requirements. But here it is expressly provided that the opinion of the superintendent of insurance shall be subject to the review of any court with competent jurisdiction. The policy must be plainly printed; its file back must contain a brief description of the policy, and all exceptions must be printed with the same prominence as the benefits to which such exceptions apply. The policy must also contain nine important provisions, defining among other things the rights of the parties under the application for the policy, or in the charter, constitution and by-laws of the company, the time and place of notice of accident or disability, the payment and adjustment of the premium, the cancellation of the policy and proofs of claim and payment of losses. On the other hand, no such policy shall be issued and delivered if it contains:

(1) A provision limiting the time within which action at law or in equity may be commenced to less than one year from the date when the final proof of claim is filed with the corporation.

(2) A provision authorizing the deduction of any premium or assessment from any indemnity payable under the terms of the policy, except such premium or assessment as may be due or covered by written order or note at the time of payment of indemnity.

(3) A provision limiting the amount of indemnity to be paid to a sum less than the indemnity as stated in the policy, and for which the premium has been paid; provided, however, if the assured shall carry other insurance covering the same hazard without giving notice to the companies, then, and in that case each company shall be liable only for such proportionate amount of benefits as the indemnity promised bears to the total amount of indemnity in all the policies covering such hazard, and for the return of such part of the premium paid as shall exceed the pro rata of the premium for the benefits paid.

Owing to the recent tendency in legislation to control the specifications in accident and health policies, the International Association of Accident Underwriters appointed a committee to secure the coöperation of the various companies in standardizing their policy forms under the new laws recently passed by Minnesota, New York, and Massachusetts, and before submitting them to the insurance departments of these states for approval. The committee has especially devoted much time toward the exclusion of the many superficial provisions, so commonly met with in accident and health policies which may be conveniently designated as "frills."

Health and Accident Policies.—Furthermore, in view of the recent legislation, the insurance departments of New York and Massachusetts have issued a circular of rulings and suggestions relative to the form of health and accident policies to be filed for approval. Two of these rulings deserve special mention. In the past it has been the practice of most casualty companies to dispense with applications signed by the insured, but in lieu of such application there has been printed on the back of the policy a schedule of warranties presumed to be statements made by the insured which, according to the terms of the policy, were considered binding. In reality, however, these statements were filled out by the agents. The insurance departments have now ruled that this practice must cease and that schedules of warranties will no longer be permitted, and that if there is a written application it must be signed by the insured, and must be so phrased as to direct the insured's attention to the representations made therein. It was also a practice of companies in many instances to insert clauses in their policies providing that the issuance of a new policy on the same insured should have the effect of canceling every prior policy written by the same company. Such a practice, however, might disturb the vested interest which the insured has acquired by the terms of the old policies, and hence the departments suggest that all new policies written after Jan. 1, 1911, contain a clause to the effect that "Such policy shall be void in case the company already has a policy on the insured, unless the new policy contains an indorsement to the effect that the prior policy may be continued in force."

LIABILITY INSURANCE

Employers' Liability.—The statistical exhibit of liability insurance companies in the 1910 issue of the *Insurance Year Book* shows that twenty-four companies were writing this form of insurance in the United States during 1909, with a total premium income of $25,500,000, and total losses of $13,300,000. Few forms of insurance have such complex and rapidly changing conditions to contend with as liability insurance. Most underwriters engaged in this form of insurance concede that the employers' liability legislation of the country will probably change so radically in the near future as to completely change the legal relations existing between employer and employee. The tendency, it is conceded, is toward laws offering greater protection to the employee in the form of definitely prescribed compensation in case of injury, thus more and more approximating the highly developed systems of employers' liability legislation existing in the leading countries of Europe. Some of the American companies, in fact, anticipating this movement, have already begun to exploit various kinds of "employers' compensation policies." Of course, as employers' liability legislation becomes more drastic in favor of the employee, the need for liability insurance will become correspondingly apparent, and the increase in the risk which the companies will be called upon to assume will necessarily result in a material increase in the rate of premium.

The two laws passed by the State of New York took effect Sept. 1, 1910. Space does not permit a full discussion of these laws and consequently only the essential features will be outlined. The first of these laws, Senate bill 687, is entitled "An act to amend the labor law in relation to employers' liability." This law does away entirely with the common law defense of contributory negligence by providing that when personal injury is caused to an employee who is himself in the exercise of due care and diligence at the time, by reason of any defect in a condition of the ways, works or machinery, or by reason of the negligence of any person in the service of the employer intrusted with any superintendence, "the employee, or in case the injury results in death, the executor or administrator of a deceased employee who has left him surviving a husband, wife, or next of kin, shall have the same right of compensation and remedies against the employer as if the employee had not been an employee of, nor in the service of the employer, nor engaged in his work."

Further provision is made that an employee "by entering upon or continuing in the service of the employer, shall be presumed to have assented to the necessary risks of the occupation or employment, and no others. The necessary risks of the occupation or employment shall, in all cases arising after this article takes effect, be considered as including those risks, and those only, inherent in the nature of the business which remain after the employer has exercised due care in providing for the safety of his employees, and has complied with the laws affecting or regulating such business or occupation for the greater safety of his employees."

Compensation for Injuries. — The law contains a further feature which permits employers to contract with their employees for the payment of a stipulated amount of compensation in the event of injury. This agreement as to compensation is exceedingly important, but, it is believed, will not be taken advantage of to any great extent, because of the general unwillingness of employers to enter into such fixed agreements. The amount of compensation under the plan in case death results from injury is the following: (*a*) "If the employee leaves a widow or next of kin at the time of his death wholly dependent on his earnings, a sum equal to twelve hundred times the daily earnings of the employee at the rate at which he was being paid by the employer at the time of the accident, but not more in any event than $3,000. Any weekly payments previously made under this plan shall be deducted in ascertaining such amount payable at death. (*b*) In case the widow or next of kin is only partly dependent upon the employee's earnings, the scale of compensation shall be graded according to a plan outlined by the law which takes into account the extent of the injury. (*c*) In case no dependents exist, the reasonable expenses of his medical attendance and burial, not exceeding $100."

The law further provides that where an agreement of compensation for injury exists between employer and employee, the employee shall have no other right of action against the employer under any statute or at common law save under the plan consented to, unless the injury is caused by the employer's failure to obey any requirements of duly authorized public authorities relative to the safeguarding of such employees.

The second law passed in New York, known as Senate bill 685, is important in so far that it makes it mandatory for employers to pay a fixed compulsory compensation as regards injuries occurring in certain dangerous trades enumerated by the law. Eight different classes of trades are enumerated by the law for this purpose, and the scale of compensation resembles that outlined in the preceding law. (See XVI, *Labor and Labor Legislation.*)

The Ohio Law.—The Ohio law of 1910 will also have an important bearing upon the question of employers' liability for injuries to employees. According to this law in all actions brought to recover from an employer for personal injuries, it shall be held in addition to the liability now existing by law, that any person in the employ of such employer in any way having power or authority in directing or controlling any other employee of such employer, is not a fellow servant, but superior to such other employee. If an employee receives personal injuries by reason of defects in any of the ways, works, machinery or appliances, the employer shall be deemed to have had knowledge of such defects before and at the time the injury was sustained. The presence of the defect shall constitute *prima-facie* evidence of neglect on the part of the employer, although he may show by way of defense that the defect was such as could not be discovered in the exercise of ordinary care. The law next enumerates a large number of instances where, in actions for damages, the negligence of a fellow servant of the employee shall not be a defense. Further provision is made that in all such actions, the fact that the employee may have been guilty of contributory negligence shall not bar a recovery where such contributory negligence is slight and the negligence of the employer is gross in comparison.

In view of the important legislation of 1910, much doubt exists as to the effect which these laws will ultimately have upon the prevailing premium rate in employers' liability insurance. The companies have already adopted a new set of rates, and the opinions expressed in the *Insurance Press* seem to indicate the conviction that the laws in New York will increase the present rates of premium from seventy-five to one hundred per cent. Liability underwriters and attorneys seem also to be almost a unit in believing that the new laws will greatly increase the number of lawsuits; in other words, that the result will be similar to that experienced in England at the time of the passage of its last important employers' liability law.

Under the first of the New York laws the liability companies have expressed a willingness to accept the increased burden of responsibility placed upon the employer under the terms of policies now in force, except where the agreement has been entered into between employer and employee providing for the payment of a fixed sum for injuries. Under the second law, however, the liability companies have served notice on their policyholders that their present policies do not cover unconditional compensation provided regardless of contributory negligence. The attitude of the companies is well illustrated by the notice sent by the United States Casualty Company to its New York policyholders. This notice sets forth clearly the essential features of the new laws and the position which the companies are forced to take toward the same.

"The liability insurance policies," the notice reads, "you are now carrying provide indemnity against 'damages' arising from accidents, whereas after Sept. 1st you may become liable to pay 'compensation' to persons injured.

"Broadly speaking, 'damages' means the amount awarded (after the accident) by a court and jury in favor of the injured party against the party at fault, or the amount paid in compromise without a lawsuit, while 'compensation' is fixed (by the new law) in advance of the accident and (practically) irrespective of who is at fault.

"No liability insurance policy heretofore issued by any company covers the liability of the assured for 'compensation' under the new law. Your policies protect you against your present liability, and also your increased liability for 'damages' after Sept. 1st, but do not cover liability for 'compensation.'

"We deem it only fair and proper to give you this notice, that you may be duly informed, and that you may provide yourself (on and after Sept. 1st) with protection against this new and additional liability for 'compensation,' if you so desire. (All your present liability for 'damages' will remain after Sept. 1st, while one of the new laws will on that date remove substantially all the defenses heretofore accorded employers, and on that date the other new law may add thereto compulsory liability for 'compensation.')

"Your additional liability for 'compensation' under the new law may be covered by specific insurance, which we will issue under suitable conditions and at reasonable premium rates."

XIII. MILITARY AND NAVAL

William Conant Church

THE ARMY

Progress in the Military and Naval Art in the United States during the year has been along the lines of improved administration, increase in the effectiveness of gun-fire ashore and afloat, and the development of new methods of warfare by the use of appliances hidden beneath the water, or sailing in the air above.

In the Quartermaster's Department of the Army, in the department of logistics, defined as the details of moving and supplying armies, the development of the practical working of the system of decentralization in the method of accounting and furnishing those supplies which was first applied tentatively with the fiscal year ending June 30, 1909, has since been perfected and extended to nearly all classes of quartermasters' supplies.

The fundamental principle of this system is that department commanders and commanders of large independent stations shall have apportioned to their departments or posts a proportionate share of the annual appropriation made by Congress for supplies and services, and shall practically be given authority to arrange all the details of procuring them.

Another marked incident of progress, developed during the year, is a change in the specifications for supplies in general use, with a view to eliminating characteristics that have heretofore distinguished certain articles used in the military services from those provided for similar purposes in civil life. Thus in the matter of clothing and material for its manufacture, the difference between that worn by the soldier and the civilian is practically only the distinctive marks of cut and color required by regulations for articles of the outer uniform. The purpose of these changes is to reduce cost by increased competition, but more particularly to extend facilities and enable the department to avail itself of increased resources for supplies in large quantities and from a greater number of places in case of an emergency.

The Ration.—Upon the quality and the cooking of the ration largely depend the health and the fighting capacity of the army; and nothing is more conducive to the good spirit and contentment of the soldiers than a well managed mess. As a measure of good administration, and to fully meet the requirements of the service, training schools for bakers and cooks have been established. There are three of these schools, located at San Francisco, at Washington City, and at Fort Riley, Kansas. Each school is in charge of an officer of the Subsistence Department, assisted in his duties by instructors who are graduates of the schools and qualified for the work. Officers as well as enlisted men are given training at the schools and the greatest interest is being manifested in the work. The course of instruction is both theoretical and practical, and is for four months; and there are continually under instruction two, and at times, four classes of bakers and cooks.

In 1907 Congress imposed upon the Subsistence Department of the Army the duty of supplying cooking apparatus. As the result of much study ranges have been devised believed to be the best instruments for field cooking used by any army. There are two styles of ranges, one intended for a detachment and one for a company, and an oven which will provide about 240 rations at one baking. For the first time since the Civil War the troops are provided on the march or in camp with the means of obtaining a full supply of fresh bread of excellent quality. The type of oven thus developed, a knock-down continuous baker, with the necessary bakery equipment and the tentage, can be packed into one wagon, thus reducing the transportation of the field bakery column over fifty per cent below that required in the case of rolling ovens as in many of the foreign armies.

The rolling kitchen is designed to cook and serve to 450 men, the approximate war strength of a battalion of infantry; this enables the command to march and maneuver with entire disregard as to camp, and assures that a well-cooked meal will be served at any place where a wagon can go at any time.

For a number of years experts have been seeking to obtain a satisfactory emergency ration for the United States Army, and at last one has been secured. It is composed of chocolate liquor, nucleo-casein, malted milk, desiccated egg, sugar, and cocoa butter. This will sustain the soldier for twenty-four hours, and may be eaten dry, or mixed with water and used as a beverage, and is palatable when moistened and mixed with hard bread. The ration will meet all the requirements the best authorities deem necessary for such a ration. It has the advantage of being not only a mixture of the most soluble food elements, but is compressed into palatable form, and will not require a special plant to manufacture. The ration will be reasonable in price, will keep for years, and can be obtained in unlimited quantities on short notice.

Equipment.—The army has adopted a new equipment for the infantry soldier, which comprises the articles which he must carry with him in campaign, as distinct from those which are transported for him. The principal change is in the method of carrying the articles which the soldier must never be without, and which have heretofore been carried in the knapsack, blanket roll, or by other similar means. The new equipment is lighter in weight than that it replaces, and is so designed that the less necessary part of it can be easily detached for transportation in wagons or on pack mules.

Ordnance.—Guns of fourteen-inches caliber have been completed and tested by the Ordnance Department of the Army. The use of wire has entered largely into the construction of these guns. A new machine-gun, weighing only twenty-two pounds, firing the same ammunition as the rifle, has been adopted and put into manufacture for the use of the army.

Two turrets, to be armed with the fourteen-inch guns, have been designed for the defense of Manila Bay, Philippine Islands, and the manufacture of the guns and turrets inaugurated. These turrets will have heavier steel armor and more powerful guns than any thus far constructed.

Engineer School.—During the past year the organization of the engineer troops of the army has been changed for purposes of field operations. The new organization provides that the present four company battalions be changed into provisional three company battalions, and that the fourth battalion be formed by taking one company from each of three old battalions and organizing them into a provisional battalion. The battalions themselves are divided into pioneer and ponton battalions, three pioneer to one ponton. One pioneer battalion is attached to each division and one ponton battalion is attached to each field army. The organization of the foot companies themselves is practically unchanged, and a foot company has an enlisted strength of 164; the foot pioneer companies and ponton companies are substantially alike. The organization of the mounted pioneer companies for duty with the cavalry divisions is parallel with that for the foot companies, but the enlisted strength is only 100.

The bridge equipage with each bridge company has been doubled and two companies now have each two divisions of heavy equipage, total 450 feet of normal bridge; while one company has two divisions of light equipage, total 372 feet of normal bridge.

During the year experiments have been continued in the use of a metal divisible ponton boat, in the tactical and technical use of searchlights, in the use of motor trucks for purposes of reconnaissance and surveying and as a motive power for the searchlight trucks and their generators.

The supply of the new engineer equipment to the engineer troops and other line troops has been practically completed and much equipment has been issued to the engineer companies of the organized militia.

Wireless Telegraphy.—Both the War and Navy Departments have devoted much attention to developing the use of wireless telegraphy as a protection at sea, and many stations have been installed for army and navy use. Through the efforts of these government departments the coast of the mainland of the United States, of Alaska, Hawaii, Porto Rico, and the Panama Canal Zone are now so provided with wireless shore stations that a vessel at sea can communicate almost anywhere within 300 miles of the shore. Army transports are being equipped with sparkless wireless telegraph instruments in which the noise of the key is suppressed and the electric efficiency of the transmitter is greatly increased. (See XXIX, *Electrical Engineering.*)

Military Aeronautics.—The aeronautical division of the signal corps of the army has devoted much attention to the development of aeronautics for military purposes, following the example of European experts. The equipment of the aeronautical division comprises a balloon house at Fort Myer and a balloon house of much greater capacity at Fort Omaha, where is also a large electrolysis plant for the decomposition of water and the collection and storage of hydrogen and the compression of it into steel tubes for transportation. The division has some spherical balloons, one dirigible, and is providing for at least one, and possibly two, aeroplanes. The present equipment could be used in time of war. (See XXIX, *Aeroplanes.*)

Automobiles.—Experiments with automobiles for military transportation have been made at the Northwestern Military Academy, and were continued during the summer at the different army maneuvers. Much valuable information has been collected in connection with these experiments. (See XXIX, *Automobiles.*)

Sanitation at Panama.—The admirable work of our army officers on the Isthmus of Panama has continued during the year to excite admiration and astonishment. In a recent address Col. William C. Gorgas, Medical Corps, U.S.A., who has charge of the sanitary work on the Isthmus, said: "Even if the canal fail commercially, it still will justify the cost in building it by demonstrating that the white man can live and work in the tropics, and maintain his health at as high a point as he can, doing the same work, in the temperate zone." The comparative figures given by Colonel Gorgas show the death rate of the Canal Zone to be practically the same as that of Providence, R. I. The cost of a sanitary revolution like this in the tropics he proves by figures to be well within the financial ability of any tropical community. (See XI, *Panama Canal.*)

Reclamation Service.—Brig.-Gen. William L. Marshall, U.S.A., who recently retired as Chief of Engineers of the Army, was on July 2 appointed consulting engineer to the Secretary of the Interior in the reclamation service, to assist in solving the engineering problems involved in completing the reclamation projects now under way. The work of spending twenty million dollars in reclaiming the arid lands of the West, under the act of Congress authorizing the issuing of government bonds to that amount, for that purpose, will be done on plans approved by General Marshall and the Board of Engineers. Formal orders creating this board were issued from the War Department on July 7, 1910. General Marshall will be a sort of an engineer-aid to the President, an honor never before conferred upon an engineer officer. With this additional duty the Corps of Engineers will direct the expenditure of more than $71,000,000. (See XI, *Reclamation Service.*)

New Field Service Regulations for the army have been issued during the year. They were used for the first time in the maneuvers commencing in some of the military departments on July 1, 1910.

XIII. MILITARY AND NAVAL

AUTHORIZED STRENGTH OF THE ARMY

	Major-generals.	Brigadier-generals.	Colonels.	Lieutenant-colonels.	Majors.	Captains.	First-lieutenants.	Second Lieutenants.	Chaplains.	Total Commissioned Officers.	Enlisted Men.
*General officers	6	15	....	....	....	.....	.....	.....	...	21	......
Adjutant-general's department	1	1	5	7	10	.....	.....	.....	...	24	......
Inspector-general's department	..	1	3	4	9	.....	.....	.....	...	17	......
Judge advocate general's department	..	1	2	3	6	.....	.....	.....	...	12	......
Quartermaster's department	..	1	6	9	20	60	.....	.....	...	96	200
Subsistence department	..	1	3	4	9	27	.....	.....	...	44	203
Medical department	..	1	15	21	102	118	*a*364	.....	...	*a*621	(*b*)
Pay department	..	1	3	4	20	25	.....	.....	...	53	......
Corps of engineers	..	1	10	16	32	43	43	43	1	189	2,002
Ordnance department	..	1	6	9	19	25	25	.....	...	85	730
Signal corps	..	1	1	2	6	18	18	.....	...	46	1,212
Bureau of insular affairs	..	1	1	....	1	.....	.....	.....	...	3	......
Fifteen regiments of cavalry	..	...	15	15	45	225	225	225	15	765	12,775
Six regiments of field artillery	..	...	6	6	12	66	78	62	6	236	5,220
Coast artillery corps	..	1	14	14	42	210	210	167	14	672	19,321
Thirty regiments of infantry	..	...	30	30	90	450	450	450	30	1,530	25,231
Porto Rico regiment of infantry	..	...	....	....	....	11	10	10	1	32	576
Military Academy	..	...	4	3	....	.....	.....	.....	...	7	500
Recruiting parties, recruit depots, and unassigned recruits	..	...	....	....	....	.....	.....	.....	...	.....	8,000
Service—school detachments	..	...	....	....	....	.....	.....	.....	...	.....	546
U. S. military prison guards	..	...	....	....	....	.....	.....	.....	...	.....	320
Indian scouts	..	...	....	....	....	.....	.....	.....	...	.....	75
Total regular army	7	27	124	147	423	1,278	1,423	957	67	4,453	76,911
Additional force:											
Philippine scouts	..	...	....	....	....	52	64	64	...	180	5,732
Grand total	7	27	124	147	423	1,330	1,487	1,021	67	4,633	82,643

* The highest rank on the active list of the United States Army is that of major-general, though on the retired list there were on Sept. 1, 1910, five lieutenant-generals, this rank on the active list having lapsed with the retirement of Lieut.-Gen. Arthur MacArthur, June 2, 1909.

a Includes 170 first lieutenants of the Medical Reserve Corps on active duty.

b Under the act of Congress approved March 1, 1887 (24 Stat. L., 435), the enlisted men of the Medical Department (Hospital Corps) are not to be counted as part of the strength of the army. The authorized strength of the Hospital Corps is 3,500 enlisted men.

PAY OF THE UNITED STATES ARMY

GRADE.	Pay of Officers in Active Service.		Pay of Retired Officers.	
	PAY OF GRADE.		PAY OF GRADE.	
	Yearly.	Monthly.	Yearly.	Monthly.
Lieutenant-general	$11,000.00	$916.67	$8,250.00	$687.50
Major-general	8,000.00	666.67	6,000.00	500.00
Brigadier-general	6,000.00	500.00	4,500.00	375.00
*Colonel	4,000.00	333.33	3,000.00	250.00
*Lieutenant-colonel	3,500.00	291.67	2,625.00	218.75
*Major	3,000.00	250.00	2,250.00	187.50
*Captain	2,400.00	200.00	1,800.00	150.00
*First lieutenant	2,000.00	166.67	1,500.00	125.00
*Second lieutenant	1,700.00	141.67	1,275.00	106.25

*After 5 years' service 10 p. c. increase.
" 10 " " 20 " "
" 15 " " 30 " "
" 20 " " 40 " "

THE NAVY

Naval Reorganization.—A scheme for the reorganization of the administrative duties of the Navy Department was discussed and some of its features introduced during the term of office of Secretary Truman H. Newberry. A radically different plan was elaborated by Secretary George von L. Meyer on his assumption of the naval portfolio, and this is now in operation.

This plan gives the office of the Secretary of the Navy an advisory staff as follows:

Aid for Operations:
Rear-Admiral Richard Wainwright.
Aid for Personnel:
Rear-Admiral William P. Potter.
Aid for Inspections:
Rear-Admiral Aaron Ward.
Aid for Material:
Captain Frank F. Fletcher.
Aid to the Secretary of the Navy:
Commander Philip Andrews.

By a provision of the Naval Appropriation Act of June 24, 1910, Congress authorized the temporary abolishment of the Bureau of Equipment and the distribution of that bureau's duties among the other bureaus, and under this authorization the administration of the Navy Department affairs is now distributed as follows:

I. Division of Operations of the Fleet, which includes (1) Office of Naval Intelligence, with Capt. Templin M. Potts, as Chief Intelligence Officer; (2) Naval War College, Rear Admiral R. P. Rodgers, President.

II. Division of Personnel, comprising (1) the Bureau of Navigation (Recruiting, Naval Observatory, Hydrographic Office); (2) Naval Examining Board; (3) Naval Retiring Board; (4) Naval Medical Examining Board; (5) Board for Examination of Medical Officers; (6) Bureau of Medicine and Surgery, with its Naval Medical School and Naval Dispensary; (7) Office of the Judge Advocate General.

III. Division of Material, comprising (1) the Bureau of Ordnance; (2) Bureau of Construction and Repair; (3) Bureau of Steam Engineering; (4) Bureau of Supplies and Accounts.

IV. Division of Inspections, comprising (1) the Board for Inspection and Survey for Ships; (2) Board of Inspection for Shore Stations; (3) Inspector of Engineering; (4) General Inspector of Pay Corps, and (5) Inspector of Public Works.

V. Under Office of the Assistant Secretary: (1) Bureau of Yards and Docks; (2) Marine Corps.

Steam Engineering.—The last year has been one of great progress, due chiefly to the following reasons:

1. Practically every detail of the present naval organization takes account of the great part that engineering plays in general naval efficiency.

2. The School of Marine Engineering recently established by order of the Secretary of the Navy is giving an impetus to engineering throughout the service, and is improving the quality of the personnel, and of the machinery, by indirect as well as by direct means.

3. The system of engineering competition has been the source of distinct economy, and has caused really great improvement in the general efficiency of the navy.

4. Improvements have been installed in existing machinery plants of naval vessels, designed to bring them up to date. Successful high speed trials have been held. Many experiments have been made to determine the exact value of new devices and ideas. The Engineering Experiment Station has been more widely used than heretofore for the elimination of bad material, and theoretically or practically unsound apparatus.

Naval Medical Corps.—The work of the Naval Medical Corps at home and abroad during 1910 shows an enviable record of devotion to duty which is traditional in this branch of our naval service. A large program of erection of new buildings and renovation of old has been steadily in progress at the various shore stations. Worthy of note is the personal supervision of the organization of the medical department in the actual battle practice of the Atlantic fleet during the month of September.

The establishment and administration of the U. S. Naval Emergency

Hospital, Bluefields, Nicaragua, by P. A. Surgeon W. S. Pugh, Jr., for the care of the sick and wounded brought to Bluefields after the battle of Recreo, and the medical supervision of the Nicaraguan Government troops surrendered at that battle, reflect credit upon the service. Forty grave cases of gunshot wounds were treated in this emergency hospital.

Following the technic of Rosenberger, the bacillus lepræ was demonstrated in the blood of lepers in Guam by Assistant Surgeon Crow, U.S.N. In fifteen out of sixteen cases the "blood contained a bacillus which morphologically and in staining is identical with the lepræ bacillus." A later report to follow this preliminary announcement will give results of the examination of the remaining members of the leper colony at Guam, and of the inoculation experiments which are to be made. (See XXVIII, *Medicine and Hygiene.*)

The Naval Medical School.—The work done at this institution is of high order, and the facilities afforded by the Naval Medical School Hospital offer special advantages for the study of tropical medicine, general medicine, surgery, and laboratory work.

The *Solace* has proved invaluable as a floating hospital with the fleet. A number of well-trained specialists and nurses are constantly available for treatment of the cases sent from the various ships. The work done by this ship is a forceful argument for a similar ship to accompany our Pacific fleet.

The adoption of a new naval health record which is to be continuous and is to accompany each officer and man, is an innovation which will render possible the abolition of several returns formerly in use.

Submarines.—Remarkable work with submarines has followed the issuance of General Order No. 63, of the Navy Department, dated April 14, 1910, which abrogates the provisions which forbade the cruising or maneuvering of these craft unaccompanied by a convoy, the order stating that the mechanisms of such craft have been sufficiently perfected and officers and men sufficiently trained in their use to make the restriction no longer necessary.

The trip of the *Viper*, of the Atlantic torpedo fleet, from Charleston, S. C., to Annapolis, is regarded as epochal by navy officers, demonstrating that a vessel of the type can readily go out under its own power, for two hundred miles, accomplish its purpose and work safely back into its port. This means that hostile vessels approaching nearer than two hundred miles to our coast will be in great danger, and that we have a source of security to our coast in times of war. There was little or no escape of gasoline vapor in any of the torpedo vessels, and not one officer or enlisted man was made sick by vapor. Each submarine carried provisions for five days, water for two weeks, and about 1,900 gallons of gasoline, a sufficient supply for five days.

The submarines *Pike* and *Grampus* made a cruise of 550 miles under their own power from Mare Island, Cal., to San Diego, Cal., in eleven days, accompanied by a tender and a collier. The trip was made without mishap to man, officer, or vessel. A still more remarkable voyage was that of the submarine *Salmon* with twenty-one persons aboard, to Hamilton, Bermuda, and return, 1514 miles. Lieut. David A. Weaver, U.S.N., who commanded her, said, "The cruise demonstrated that a submarine can go to sea and is habitable, the degree of comfort depending upon the length of the cruise and the weather conditions. In a gale at sea I consider a boat of the *Salmon* type as safe or safer than any other type of sea-going craft of 288 tons displacement."

Target Practice.—The remarkable progress in navy target practice is indicated by the fact that the men behind the guns at recent target practice in Southern waters made a percentage of ninety-four with the twelve-inch battery, eighty-four per cent hits with the eight-inch and seventy-three per cent with the seven-inch guns, Capt. H. O. Dunn, commanding the *Idaho*, said: "When it is remembered that this gunnery was done at sea in fairly rough weather, steaming ten knots an hour, and aiming at a small canvas target, 1,215 feet, the difficulties of the practice can be realized. Hard, earnest work by officers and crew not only put the *Idaho* at the head of the American navy, but at the head of the world sea-fighters." The best twelve-inch gun made three hits in sixty-eight seconds. The best eight-inch turret made fifteen hits out of sixteen shots in the fast time of one minute and seventeen seconds, or three hits per gun per minute. The best seven-inch gun made nine hits out of ten shots at the rate of seven hits per minute.

Naval Ordnance.—The developments of the past year in Naval Ordnance, while they have not included any very radical changes, have been characterized by steady progress along lines already worked out. The most significant of these developments may be classified as follows:

1. Improvements in the size, power, and accuracy of guns.
2. Improvements in the quality of projectiles.
3. Improvements in the range and accuracy of torpedoes.

The very general acceptance of the Dreadnought type of all-big-gun battleships was followed almost immediately by a demand for more powerful guns, and this demand has been met in England by the 13.5-inch gun assigned to the latest battleships laid down, and in this country by the still heavier and more powerful fourteen-inch which will make up the armament of the battleships provided for in the latest appropriation bill. This gun, the most powerful yet designed for use afloat, fires a projectile of 1,400 pounds, while that of the twelve-inch guns of the *Arkansas* and *Wyoming* weighs only 800 pounds.

The increase in power resulting from the greater weight of the new projectile becomes more marked as the range is increased, its penetration at 10,000 yards being estimated at seventeen inches of hard-faced steel, which is about equal to that of the twelve-inch at 7,500 yards. These figures are, for both guns, considerably in excess of what they would have been a year ago, an important part of the gain in range being due to a change in the *shape* of the projectiles, as a result of which the resistance of the air has been materially reduced and remaining velocities at long ranges correspondingly increased. This connects two of the lines of development which have been referred to above: the increased power of guns, and the increased efficiency of projectiles, both of which make for increased range, accuracy, and penetration.

So far as penetration is concerned, we must, of course, take account of the *quality* of the projectile and that of the armor against which it is to be used. For several years past there has been no marked improvement in the quality of armor either in this country or abroad. The development of projectiles has also lagged somewhat, but in this particular a decided advance has recently been made in this country, and for the moment the balance in the long contest between armor and projectiles seems to incline to the side of the latter, at least so far as this country is concerned. The superiority of the projectiles is accentuated—still referring to our own naval ordnance—by the recent adoption of a high explosive for use with these projectiles, which is believed to be superior to any heretofore used, and of a fuze which admits of driving the projectile through thick armor and exploding it in rear.

Torpedoes.—The range of torpedoes has been gradually increased within the last few years and the year just past has seen the range extended to four thousand yards. At the same time, the accuracy has been greatly increased. The result is that the torpedo has taken on a new character, and promises to come far nearer than in the past to realizing the possibilities which have always been attributed to it but which have heretofore been imaginary rather than real.

In its present form, with its greatly increased radius of effectiveness, it coincides in effect with the other factors which have been described, to increase battle ranges for large ships; and adds enormously to the value of torpedo-vessels, since it not only gives them a far more accurate weapon than they have had before, but enables them to operate at a distance where they are safe from detection by search-light. An important result of the increased effectiveness of the torpedo is a proposal to armor the bottoms of battleships; not, of course, with the sort of armor now used on the belts and turrets, but with such a thickness of homogeneous steel as will enable the hull to resist the explosion of a torpedo below the belt.

It will be seen that the most significant result of recent developments in ordnance has been to increase effective battle ranges from something like 6,000 yards, at which they seemed to be definitely fixed only a short time ago, to nearly or quite 10,000 yards. And this result of developments in material corresponds, as it happens, with developments in the training of personnel, as a consequence of which it is possible to make almost as many hits at the greater range as it was a few years ago at the shorter one. The effect of so many causes acting coincidently toward the same end cannot fail to modify profoundly the naval tactics of the future.

Associated with the features of development which have been described above as the most significant in the progress of the year are many points of minor, but by no means negligible importance. The accuracy of fire at long range which has been referred to would be impossible without improvements in sights and in mechanisms for handling and training the guns, just as the extraordinary rapidity of fire from twelve-inch and fourteen-inch guns would be impossible without marvelously perfect arrangement for handling the ammunition and loading the guns. In these and other respects, the past year has seen improvements which have kept pace with the larger and more conspicuous features outlined above.

American Battleship Construction.—A noteworthy event of the year is the demonstration by the Fore River Shipbuilding Company of its ability to compete with all the world in the building of battleships in both time and cost. Not only did the Americans bid $40 a ton or ten per cent less than the British, but they offered to complete their work in six months less time. The British bid was the highest of the five and the length of time required by them the longest. Here is the story, as it appears in the official statement of the Argentine Government.

	Tonnage.	Speed.	Principal belt-line, inches.	Price per ship.	Time in months.
U. S. A. (Fore River) . .	27,940	22.5	12	$10,950,000	27
British.	27,840	23	12	12,118,750	33
French. . . .	27,840	22	10	11,813,750	29
German. . . .	26,900	25	12	11,790,000	27
Italian.	25,600	22	10	11,000,000	28

A Naval History Society has been incorporated in New York during the year.

NAVAL STATISTICS

AUTHORIZED STRENGTH OF THE NAVY

Admiral of the navy.	1
Rear-admirals.	28
Captains.	81
Commanders.	119
Lieutenant-commanders.	211
Lieutenants.	319
Lieutenants (junior grade)	4
Ensigns.	390
Midshipmen at sea.	352
Medical directors.	15
Medical inspectors.	16
Surgeons.	86
Passed assistant surgeons.	104
Assistant surgeons.	72
Acting Assistant surgeons.	20
Pay directors.	14
Pay inspectors.	15
Paymasters.	76
Passed assistant paymasters.	56
Assistant paymasters.	36
Chaplains.	23
Professors of mathematics.	14
Secretary to the admiral.	1
Naval constructors.	29
Assistant naval constructors.	42
Civil engineers.	29
Assistant civil engineers.	12
Chief boatswains.	89
Boatswains.	82
Chief gunners.	78
Gunners.	77
Chief carpenters.	66
Carpenters.	49
Chief sailmakers.	4
Chief machinists.	85
Machinists.	131
Pharmacists.	25
Total.	2,851

On the retired list of the navy are 144 rear admirals, 37 commodores, 50 captains, 77 commanders, 25 lieut.-commanders, and other officers to the total number of 764.

PAY OF THE UNITED STATES NAVY

[Acts of May 13, 1908, and Mar. 3, 1909.]

	Shore.	Sea.
Admiral	$13,500	$14,850
Rear-admirals:		
First nine	8,000	8,800
Second nine	6,000	6,600
Chiefs of bureaus	6,000	......
Captains	4,000	4,400
After 5 years	4,400	4,840
After 10 years	4,800	5,280
After 15 years	5,000	5,500
Commanders	3,500	3,850
After 5 years	3,850	4,235
After 10 years	4,200	4,620
After 15 years	4,500	4,950
Lieutenant-commanders	3,000	3,300
After 5 years	3,300	3,630
After 10 years	3,600	3,960
After 15 years	3,900	4,290
After 20 years	4,000	4,400
Lieutenants	2,400	2,640
After 5 years	2,640	2,904
After 10 years	2,880	3,168
After 15 years	3,120	3,432
After 20 years	3,360	3,696
Lieutenants, junior grade	2,000	2,200
After 5 years	2,200	2,420
After 10 years	2,400	2,640
After 15 years	2,600	2,860
After 20 years	2,800	3,080
Ensigns	1,700	1,870
After 5 years	1,870	2,057
After 10 years	2,040	2,244
After 15 years	2,210	2,431
After 20 years	2,380	2,618
Midshipmen:		
At Naval Academy	600	......
After graduation	1,400	......

Midshipmen (formerly cadets) at sea in 1900, 9,371; at the Naval Academy, 848; total, 1,219.

SHIPS OF THE UNITED STATES NAVY IN COMMISSION SEPT. 1, 1910

Name of Vessel.	Displacement.	Name of Vessel.	Displacement.
BATTLESHIPS, FIRST CLASS			
Connecticut	16,000	Minnesota	16,000
Delaware	20,000	Mississippi	13,000
Georgia	14,948	Nebraska	14,948
Idaho	13,000	N. Hampshire	16,000
Indiana	10,288	North Dakota	20,000
Iowa	11,346	Rhode Island	14,948
Kansas	16,000	S. Carolina	16,000
Louisiana	16,000	Vermont	16,000
Massachusetts	10,288	Virginia	14,948
Michigan	16,000		
ARMORED CRUISERS			
California	13,680	Pennsylvania	13,680
Colorado	13,680	S. Dakota	13,680
Maryland	13,680	Tennessee	14,500
Montana	14,500	Washington	14,500
N. Carolina	14,500	West Virginia	13,680
CRUISERS, FIRST CLASS			
Charleston	9,700	New York	8,150
CRUISER, SECOND CLASS			
Newark	4,083		
CRUISERS, THIRD CLASS			
Albany	3,430	Montgomery	2,072
Chattanooga	3,200	New Orleans	3,430
Cleveland	3,200	Tacoma	3,200
Des Moines	3,200		
SCOUT CRUISERS			
Birmingham	3,750	Salem	3,750
Chester	3,750		
TORPEDO-BOAT DESTROYERS			
Bainbridge	420	Paul Jones	420
Barry	420	Perry	420
Chauncey	420	Preble	420
Dale	420	Preston	700
Flusser	700	Reid	700
Hopkins	408	Smith	700
Hull	408	Stewart	470
Lamson	700	Truxtun	433
Lawrence	400	Whipple	433
TORPEDO BOATS			
Goldsborough	255	Rowan	210
SUBMARINES			
Adder		Porpoise	
Bonita		Shark	
Cuttlefish		Snapper	
Grampus		Stingray	
Grayling		Tarantula	
Moccasin		Tarpon	
Narwhal		Viper	
Pike			
WOODEN CRUISER			
Mohican	1,900		
GUNBOATS			
Annapolis	1,010	Peoria	487
Callao	243	Petrel	890
Castine	1,177	Princeton	1,010
Dolphin	1,486	Samar	243
Dubuque	1,085	Vicksburg	1,010
Helena	1,392	Villalobos	370
Marietta	990	Wheeling	990
Mindoro	170	Wilmington	1,392
Paducah	1,085	Wolverine	685
Paragua	243	Yorktown	1,710
AUXILIARIES			
Arethusa	6,159	Iris	6,100
Buffalo	6,000	Lebanon	3,285
Celtic	8,000	Panther	3,380
Culgoa	6,000	Prairie	6,620
Dixie	6,114	Rainbow	4,360
Glacier	8,325	Supply	4,325
HOSPITAL SHIP			
Solace	5,700		
COLLIERS			
Abarenda	6,705	Marcellus	4,315
Ajax	9,250	Mars	11,200
Brutus	6,600	Nanshan	4,950
Cæsar	5,920	Prometheus	12,585
Hannibal	4,000	Vestal	12,585
Hector	11,200	Vulcan	11,200
Leonidas	4,023		

Name of Vessel.	Displacement.	Name of Vessel.	Displacement.

CONVERTED YACHTS

Eagle	434	Scorpion	775
Hist	472	Sylph	152
Mayflower	2,690	Yankton	975

TUGS

Accomao	187	Piscataqua	854
Active	296	Pontiac	401
Alice	356	Potomac	785
Apache	650	Powhatan	194
Chickasaw	100	Rapido	186
Choctaw	350	Rocket	270
Fortune	450	Samoset	225
Hercules	198	Sebago	
Iwana	192	Sioux	155
Locust		Sotoyomo	230
Massasoit	202	Standish	450
Modoc	241	Tecumseh	214
Mohawk	420	Traffic	280
Narkeeta	192	Transfer	
Navajo		Triton	212
Osceola	571	Unadilla	355
Patapsco	755	Uncas	441
Patuxent	755	Vigilant	300
Pawnee	275	Waban	150
Pawtucket	225	Wahneta	192
Penacook	230	Wompatuck	462
Pentucket	230		

SAILING SHIPS FOR TRAINING PURPOSES

Boxer	346	Intrepid	1,800
Constellation	1,970	Severn	1,175
Cumberland	1,800		

RECEIVING SHIPS

Franklin	5,170	Reina Mercedes	2,835
Hancock		Richmond	2,700
Independence	3,270	Southery*	
Lancaster	3,250	Texas	6,315
Pensacola	3,000	Topeka*	2,255
Philadelphia	4,410	Wabash	4,650

UNSERVICEABLE FOR WAR PURPOSES

Alliance	1,375		

OUT OF COMMISSION OR IN RESERVE

BATTLESHIPS, FIRST CLASS

Alabama	11,552	Missouri	12,500
Illinois	11,552	New Jersey	14,948
Kearsarge	11,520	Ohio	12,500
Kentucky	11,520	Oregon	10,288
Maine	12,500	Wisconsin	11,552

CRUISERS, FIRST CLASS

Brooklyn	9,215	St. Louis	9,700
Milwaukee	9,700		

CRUISERS, SECOND CLASS

Baltimore	4,413	Minneapolis	7,350
Chicago	4,500	Olympia	5,865
Columbia	7,350	San Francisco	4,083

CRUISERS, THIRD CLASS

Atlanta	3,000	Galveston	3,200
Cincinnati	3,183	Marblehead	2,072
Denver	3,200	Raleigh	3,183

* Prison ship.

UNDER CONSTRUCTION OR AUTHORIZED

Name of Vessel.	Displacement.	1910. Per Cent of Completion.	
		June 1.	July 1.

BATTLESHIPS

Arkansas	26,000	27.6	34.6
Florida	21,825	66.3	68.8
Utah	21,825	76.0	80.0
Wyoming	26,000	22.5	28.4
Number 34		0.0	0.0
Number 35		0.0	0.0

DESTROYERS

Ammen	742	40.4	48.5
Burrows	742	72.7	85.5
Drayton	742	82.5	86.1
Mayrant	742	73.9	79.1
McCall	742	76.5	85.4
Monaghan	742	19.9	26.7
Patterson	742	23.0	33.0
Paulding	742	89.4	92.4
Perkins	742	79.6	86.8
Roe	742	88.7	92.3
Sterett	742	77.1	83.8
Terry	742	86.9	89.7
Trippe	742	38.8	49.9
Walke	742	32.1	39.1
Warrington	742	68.3	74.4
Number 37	742	0.0	0.0
Number 38	742	0.0	0.0
Number 39	742	0.0	0.0
Number 40	742	0.0	0.0
Number 41	742	0.0	0.0
Number 42	742	0.0	0.0

SUBMARINES

Barracuda		53.5	58.6
Carp		53.5	58.6
Pickerel		50.4	53.1
Salmon		94.7	97.4
Skate		50.4	53.1
Skipjack		40.1	45.3
Sturgeon		38.9	43.7
Thrasher		5.7	6.4
Tuna		26.2	28.3
Number 28		0.0	0.0
Number 29		0.0	0.0
Number 30		0.0	0.0
Number 31		0.0	0.0
Number 32		0.0	0.0
Number 33		0.0	0.0
Number 34		0.0	0.0
Number 35		0.0	0.0

GUNBOAT

Number 16		0.0	0.0

COLLIERS

Cyclops	19.360	74.8	79.3
Jupiter		0.0	0.0
Neptune	19,360	28.2	34.9
Number 9	19,360	0.0	0.0
Number 10	19,360	0.0	0.0

THE SERVICES IN CONGRESS

Appropriations.—Aside from the regular annual appropriation bills, there has thus far been no important military or naval legislation by the Sixty-first Congress, though several bills of considerable import as to increased personnel and efficiency occupied the attention of committees and will come before Congress in the session of 1911. The regular session voted the following sums, under the appropriation bills noted, for the military and naval expenses of the fiscal year beginning July 1, 1910:

Army	$ 95,440,567
Navy	131,350,854
Fortifications	5,617,200
Military Academy	1,856,249

Other expenses of the services, including their civilian salary lists and the upkeep of their buildings at the Capital, are provided for in the Legislative Appropriation Law, and amount to something less than $3,000,000, while in the Sundry Civil Appropriation Law there is provided for arsenals, posts, and cemeteries $2,000,000. This latter law appropriates over $5,000,000 for National and State Homes for Disabled Volunteer Soldiers, and $2,613,000 for Revenue Cutter Service expenses.

The River and Harbor Law appropriates $41,329,113, but the salaries of the engineers who direct this great work are paid from the Army Appropriation Bill, all expenditures for river and harbor construction being directed by the Secretary of War, under the supervision of the Chief of Engineers, and the work prosecuted by the Corps of Engineers.

Pensions.—The Pension Appropriation Bill for the fiscal year, July 1, 1910, to June 30, 1911, carries $155,758,000, which is $5,150,000 less than the pension appropriation for the year preceding. Up to the present year the Government has paid in pensions to soldiers, sailors and marines, their widows, minor children and dependent relatives, on account of military and naval service since the foundation of the Republic, a grand total of $3,913,082,513.73, divided as follows:

War of the Revolution (estimate)	$70,000,000.00
War of 1812 (service pension)	45,757,396.84
Indian wars (service pension)	9,995,609.47
War with Mexico (service pension)	42,492,784.07
Civil War	3,686,461,840.35
War with Spain and insurrection in the Philippine Islands	26,383,805.21
Regular establishment	15,507,028.02
Unclassified	16,484,049.77

In the past thirty years the number of pensioners on the roll rose from 242,755 (1879) to 999,446 (1902), and is now put down at 946,194. The average annual value of each pension in 1909 was $169.82, while for the Spanish War they averaged $126.83; Civil War, general law, $219.96; regular establishment, $181.77. Ohio leads the States in the number of pensioners, with 92,507, closely followed by Pennsylvania (92,066) and New York (83,394). In sixty-four foreign countries we have a total of 5,047 pensioners, who drew last year $863,607.88 from the Treasury.

Naval Militia.—The governors of the several States reported the strength of their respective organizations on July 1, 1909, to be as follows:

	Commissioned Officers.	Warrant Officers.	Petty Officers.	Men.	Total.
California	44	5	114	438	601
Connecticut	17	5	42	160	224
Dist. of Columbia	14	...	46	86	146
Georgia	3	...	6	38	47
Illinois	51	...	114	473	638
Louisiana	46	6	86	497	635
Maine	4	...	16	49	69
Maryland	18	5	109	162	294
Massachusetts	41	...	114	367	522
Michigan	45	...	65	230	340
Minnesota	11	...	17	106	134
Missouri	9	1	18	78	106
New Jersey	27	2	63	258	350
New York	53	...	90	677	820
North Carolina	43	4	66	251	364
Ohio	18	...	32	215	265
Pennsylvania	7	...	19	99	125
Rhode Island	15	2	49	160	226
South Carolina	21	...	37	148	206
Wisconsin	8	...	.....	44	52
Total	495	30	1,103	4,536	6,164

MILITARY AND NAVAL MILITIA

The Organized Militia, composed of the Militia or National Guard organizations of the States and Territories, is now, by virtue of what is known as the Dick law, approved Jan. 21, 1903, a reserve of the Regular Army of the United States. The law as amended May 27, 1908, provides that to secure the benefits of the appropriations of Congress the State troops must "after Jan. 21, 1910, conform in organization, armament and discipline to the regular army, subject in time of peace to such general exceptions as may be authorized by the Secretary of War."

The President has authority, in time of peace, to fix the minimum number of organizations.

The organized militia must be called into service first after the regular army and before the volunteers. A call for their services can be issued at any time at the discretion of the President of the United States, and each man called must yield prompt obedience to the order to escape trial by a court-martial. The militia are, in short, subject to be ordered at any time into the service of the United States as a reënforcement of the regular army, and subject to the same regulations and the same penalties for a dereliction in duty as the regulars.

The militia are to be armed, uniformed and equipped at the expense of the United States, subject to inspection by officers of the regular army, as well as by officers of militia, and to take part in the encampments, maneuvers and field instruction of the regular army, receiving, while thus participating, the same pay and allowances as the regulars. The militia are to be furnished with ammunition for instruction in target practice and to have the benefit of the United States pension laws when in service. (See *Revised Statutes*, Section 1661.)

Training of Organized Militia.—A great advance has been made in the training of the organized militia of the States as an auxiliary of the regular army. In the field exercises in Massachusetts in the fall of 1909, as General Wood states in his report, officers of the organized militia were placed in charge of the various Staff Departments in order to thoroughly try them out and ascertain their efficiency and that of their departments. In the Subsistence Department a regular officer was assigned as assistant; another regular officer was in charge of Government transports. The commanding general and a number of his staff were regular officers. The difficulties which arose were those of actual service. Most of them were the result of inexperience which regular officers would in all likelihood have avoided, but they revealed to the guard the shortcomings of the officers and their need of further instruction.

The instruction in the ten maneuver camps in various parts of the country in which the militia joined with the regular army during the summer of 1910 showed a great improvement upon that of previous years. The regular officers detailed as instructors were selected with especial care by the War Department, the system of progressive instruction was much more complete and practical, and there was greater harmony of action between the regulars and the organized militia. Especial attention was given to problems of attack and defence, and throughout the instruction had definite reference to a possible state of war. There was a marked advance in the matter of sanitary instruction and the hygiene of camps, and the present method of bread baking in the field was fully demonstrated. Many officers of militia, received valuable instruction during the year at the Army Service Schools held previous to the encampments.

GROWTH OF THE WORLD'S NAVIES

S. N. D. North

The growth in the size and the cost of the world's navies has continued with increasing momentum during the year. Owing to the different standards applied in classification, it is difficult to reconcile the several official statements regarding the present naval strength of nations. The so-called Dilke return, in the British parliamentary papers, includes no ships whose construction is authorized, until they are actually laid down, and does include all armored vessels launched within the last twenty years, and all other vessels retaining their armaments and not for sale; all vessels known to have been actually laid down are placed in the list of ships building. The summary statement, which has been much criticized in England, is as follows:

SHIPS BUILT

	E.	F.	R.	G.	I.	U.	J.
Battleships	56	17	7	33	10	30	14
Armd. coast def. vess.	..	8	2	7	..	10	..
Armd. cruisers	38	20	4	9	8	15	12
Protected cruisers, I.	18	5	7	..	..	3	2
Protected cruisers, II.	35	9	2	23	3	16	11
Protected cruisers, III.	16	8	2	12	11	2	6
Unprotected cruisers	2	..	..	10	..	5	6
Scouts	8	..	..	..	..	3	..
Torpedo vessels	23	10	6	1	5	2	2
T. B. destroyers	150	60	97	85	21	25	57
Torpedo boats	116	246	63	82	96	30	69
Submarines	63	56	30	8	7	18	9

SHIPS BUILDING

	E.	F.	R.	G.	I.	U.	J.
Battleships	9	6	8	8	2	4	3
Armd. cruisers	3	2	2	3	2	..	1
Protected cruisers, II.	9	..	..	5	..	..	3
Unprotected cruisers	2	..	..	..	..	..	..
T. B. destroyers	37	17	..	12	2	15	2
Submarines	11	23	3	*	..	10	3

E. England; F. France; R. Russia; G. Germany; I. Italy; U. United States; J. Japan.

The Naval Annual (London) for 1910, edited by T. A. Brassey, contains the following account of the last year's naval construction, with an estimate of comparative naval strength: During 1909–10 five battleships have been completed for the British navy, and two (one a cruiser battleship) have been launched; for the German navy two battleships have been completed and three launched, and for the United States navy four battleships have been completed and two launched. In France steps have at last been taken to place the organization of the navy on a sound footing, and a program of new construction on the plan of the German navy acts has been adopted. Four battleships of the Danton class were launched during the year, three should be completed by the end of this year, and two battleships are to be laid down in 1910.

In Russia four battleships of the largest size were officially laid down in June, 1909, "but it is doubtful whether their construction will be prosecuted with vigor." None of the four Russian battleships launched in 1906 or 1907 has yet been completed, and it will be many years before the Russian navy again becomes a factor to be reckoned with. In Italy one battleship was completed, one laid down and three authorized. The Austrian navy progresses steadily, but the two big battleships proposed last year have not been laid down. In Japan one battleship was completed and two were laid down, while the Argentine Republic has placed in the United States an order for two battleships.

The number of battleships in full commission for the British and German navies remains about the same as last year. The British home fleet and the German high-sea fleet each comprises sixteen battleships. The French fleet in European waters has been organized in two squadrons under one commander in chief; the Italian fleet is now organized in three divisions; Russia has in commission in the Baltic two battleships, three armored cruisers and a training squadron, and in the Black Sea three battleships (one not completed) and one protected cruiser; and Austria has three battleships in commission.

The present position as regards battleships of all classes is shown in the following table:

	Built.	Building.	Total.
Britain	55	7	62
United States	29	4	33
Germany	26	11	37
France	17	6	23
Japan	12	3	15
Russia	6	8	14
Italy	11	1	12

The following is a forecast of the strength of the leading navies of the world in modern battleships at the end of 1910, 1911, and 1912:

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* Number uncertain.

	Britain.	United States.	Germany.	France.	Japan.
1910*..	33	20	19	10	9
1911†..	3	2	3	2	..
1911*..	36	22	22	12	9
1912†..	3	2	3	1	2
1912*..	39	24	25	13	11

The German naval annual *Nauticus* gives the following figures, which show how enormously both England and Germany have increased their naval strength in the last ten years, and, correspondingly, their expenditure.

England's and Germany's strength is measured in tonnage of battleships of over 10,000 tons and of armored cruisers over 5,000 tons. No vessels over twenty years old are included:

	England. Tons.	Germany. Tons.
1900...........	619,460	84,390
1910...........	1,335,870	456,580

Increase—England, 116 per cent.; Germany, 541 per cent.

	England.	Germany.
1900...........	£30,596,000	£7,868,000
1910...........	41,415,000	21,702,000

Increase—England, 35 per cent.; Germany, 275 per cent.

FOREIGN SHIPBUILDING PROGRAMS

The annual report of Secretary of the Navy George C. von L. Meyer, contains the following summary of the shipbuilding programs of the several nations:

The latest step in the development of the all-big-gun type of battleship has been the introduction of 13.5-inch guns in the British navy and 14-inch guns in the United States navy. Germany also has been conducting experiments with 14-inch guns, and is about to introduce them on her latest ships.

Another innovation is the triple-gun turret which is being installed by Italy and Russia. The Italians are reported as installing a combination of both double turrets and triple turrets on their new ships, enabling them to carry thirteen 12-inch guns in five turrets. The new Russian ships are to carry twelve 12-inch guns in four triple-gun turrets.

Displacements, as might be expected, have been still further increased, in spite of the agitation in some quarters for a return to smaller battleships. Turbines are universally adopted as the mode of propulsion.

Nearly all European powers and Japan are building all-big-gun ships. In South America, Argentina, and Brazil have such ships already built or building, while Chile is about to follow.

England, Germany, and Japan are the only powers which are now laying down so-called armored cruisers. The latest ships of this type in England have far outdistanced their contemporary battleships in displacement and speed, while carrying the same caliber of heavy guns, although fewer in number, and having but slightly less armor protection. They deserve the name of battleship cruiser now commonly applied to them, for they have outgrown the class of armored cruiser as formerly understood. It would seem that the nations building such ships are in reality building two types of battleships—fast and slow. The battleship cruiser is now generally considered as being practically in the battleship class, and counted as a capital ship.

Nearly all the principal naval powers, among the exceptions being the United States, are building fast scout cruisers and protected cruisers in addition to the heavy ships, and their building programs always include torpedo-boat destroyers and submarines.

The following are the shipbuilding programs of the various naval powers:

Great Britain.—The shipbuilding program authorized for 1910–11 provides for the following new construction: Five large armored ships, five protected cruisers, twenty destroyers, and a number of submarine boats, estimated to cost a sum of $3,649,875 in all.

The following fleet auxiliaries were also authorized: One submarine depot ship, two submarine tenders, and one salvage steamer. The salvage steamer is expected to be specially designed for the raising of submarines.

The total estimates for 1910–11 amount to $197,597,906, as compared with $170,361,950 for the preceding year. The personnel for manning the fleet was increased by 3,000.

The four so-called contingent ships authorized in 1909 were laid down in April, 1910. They are the battleships *Monarch, Thunderer,* and *Conqueror,* and the battleship cruiser *Princess Royal.* The battleships will be similar to the *Orion,* of about 22,500 tons displacement, 21 knots speed, and will carry 13.5-inch guns. The *Princess Royal* to be a sister ship of the *Lion,* of about

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*End. † To be completed.

26,350 tons displacement, 28 to 29 knots speed, and also to have 13.5-inch guns.

The Australian and New Zealand governments have passed acts authorizing the construction of two armored cruisers of the *Indefatigable* type. These two ships have been laid down, and when completed the New Zealand contribution will form part of the royal navy, while that of Australia will form part of the Australian unit.

The Canadian Government has purchased the *Rainbow,* a second-class cruiser, for use as a training ship, and also the first-class cruiser *Niobe.* Canada is also to build four Bristols, one Boadicea, and six destroyers. Two large floating dry docks, capable of taking any war vessel now building or likely to be designed, authorized in 1909, have been ordered, and are expected to be completed during 1911. Two more floating docks are included in the estimates for 1910–11.

The first lord of the admiralty in his statement to Parliament on the navy estimates, 1910–11, states that provision was made in the navy estimates, 1909–10, for work in connection with aërial navigation, and important experiments have been carried out by the recently formed aëronautical branch. The design of an experimental airship has been completed, and a ship is now under construction.

Germany.—The German naval appropriation bill for 1910–11 authorized the construction of the following: Three battleships, one armored cruiser, two scout cruisers, twelve torpedo-boat destroyers, and $3,570,000 for submarine-boat construction and experiments. The contracts for the above vessels have already been awarded, and it may be presumed that they have all been laid down.

In accordance with the fleet law, the following vessels will be appropriated for in 1911: Three battleships, one armored cruiser, two scout cruisers, twelve destroyers, and a sum of money for submarine-boat construction and experiments. This latter sum of money is usually as designated by the German navy department.

During the year 1910 the battleships *Posen* and *Rheinland* and the armored cruiser *Von der Tann* will have been completed. The old battleships *Weissenburg* and *Kurfuerst Friedrich Wilhelm* were sold to Turkey.

The total naval estimates for 1910–11 amount to $106,320,000.

France.—The naval estimates for 1910–11, as authorized, provide for the construction of the following: Six destroyers of 750 tons displacement, two destroyers of 427 tons displacement, two torpedo boats of 180 tons displacement, three submarines.

A special bill was passed which authorized the construction of two battleships, ordered to be laid down in Aug. of this year. These battleships are to be of about 23,400 tons displacement, 20 knots speed, and to carry twelve 12-inch guns.

The minister of marine has submitted to Parliament a proposed law for fixing the composition of the French fleet. This is to be accomplished by means of a continuous shipbuilding program extending to the year 1919, in which year the French navy is to attain the strength proposed.

The total estimates for 1910–11 amounted to $74,295,000.

Japan.—There are at present under construction the battleships *Aki, Settsu,* and *Kawachi;* the armored cruiser *Kurama,* three cruisers of about 5,000 tons displacement, two destroyers of about 1,100 tons displacement, and some submarines. Of these the *Aki* and the *Kurama* are nearly completed.

At present there exist three authorized programs, to be accomplished by 1916, under which shipbuilding is carried on. According to these programs there still remain to be commenced the following vessels: One battleship, three armored cruisers, two cruisers, several destroyers and torpedo boats.

The estimates for 1910–11 called for the first installment for a new armored cruiser, which is to be laid down after the launching of either the *Settsu* or *Kawachi.* This armored cruiser is to have a displacement of 18,500 tons.

Russia.—The construction of the four new battleships, *Sebastopol, Petropavlovsk, Poltava,* and *Gangut,* is progressing slowly. The main characteristics of the ships are as follows: Displacement, 23,000 tons, horse power, 42,000; speed, 23 knots; battery, twelve 12-inch guns, twenty 4.7-inch guns, four 47-mm. guns.

The 12-inch guns are mounted in four triple-gun turrets, a new departure in warship building. A number of destroyers were begun during 1910.

Italy.—The present program of construction of the Italian navy, which is to be accomplished by 1916, provides for the following: Four battleships, three scout cruisers, twelve destroyers, fifty torpedo boats, twelve submarines, one submarine docking ship.

Of the battleships, the *Dante Alighieri* was laid down in June, 1909. The other three are to be laid down this year. They are to be named *Conti di Cavour, Giulio Cesare,* and *Leonardo da Vinci.* Their displacement will be about 22,000 tons, and they will carry 12-inch guns in triple-gun turrets. The three scout cruisers have been commenced.

Contracts have been awarded for the twelve destroyers, thirty out of the fifty torpedo boats, eleven submarines, and the submarine docking ship.

Austria.—It is known that the Stabilimento Tecnico, at Trieste, has commenced the construction of two dreadnoughts. At present this is done at their own expense, for these ships have not yet been authorized by the delegations. Press reports state that the estimates for 1910–11 will undoubtedly contain the first installments for these ships, and that authority will be asked to lay down two more in 1911. The displacement is given as being about 20,000 to 22,000 tons.

Argentina.—The Argentine Government has ordered two battleships, of about 28,000 tons displacement, from the Fore River Shipbuilding Company, which company has sublet the construction of one of these ships to the New York Shipbuilding Company. There are also under construction in Europe twelve destroyers—four in England, four in France, and four in Germany.

Brazil.—The battleships *Minas Geraes* and *Sao Paulo* have been completed. A third, to be named *Rio de Janeiro,* has been commenced in England.

A movement has been initiated by the Brazilian Navy League to procure funds by popular subscription for the building of a fourth battleship, which is to be named *Riachuelo.*

Chile.—The Chilean Government has asked for tenders for the construction of one 20,000-ton battleship, four destroyers, and two submarines.

THE COST OF ARMED PEACE

The following tables show sums recently voted for new naval armament by the principal countries of the world, and the annual sums voted for army and naval purposes:

COST OF NEW VESSELS

The amounts voted for the construction of new vessels in 1909–10 and 1910–11 by seven nations were:

France	$27,994,455
Germany	52,252,134
Great Britain	49,845,102
Italy	10,646,836
Japan	12,182,691
Russia	8,856,071
United States	23,475,000
	$185,252,289

ARMY AND NAVAL EXPENDITURE

	Army.	Navy.
Austro-Hun'y, '09	$91,936,620	$12,923,370
Belgium, '09	17,301,600	....
Denmark, '10	3,979,800	2,637,900
France, '10	155,194,380	66,387,600
Germany, '10	197,687,304	107,540,816
Great Britain, '10.	134,913,600	197,330,580
Greece, '09	3,686,796	....
Italy, '09	52,193,970	32,491,238
Japan, '10	36,145,421	17,661,585
Mexico, '10	10,229,881	....
Netherlands, '09	22,920,920	8,155,478
Portugal, '10	8,703,432	8,703,433
Russia, '08	246,742,200	50,233,307
Spain, '09	3,070,791	10,090,692
Sweden, '10	13,261,590	5,167,800
Switzerland, '10	7,776,000	....
Turkey, '08	21,870,000	....
U. States, '10–11	95,440,567	131,350,854
Total	$1,123,054,872	$650,674,653
Grand Total	......$1,773,729,525	

The annual expenditures of the United States, England, Germany, and France, on account of preparation for war, or, as it is said, that war may be prevented, are to-day greater than the annual expenditures of any one of these nations during any foreign war in which it has ever engaged. In fact, these expenditures have become so great as to excite alarm in each of these principal nations of the world, causing enormous deficits in their current revenues, and necessitating new sources of taxation to meet the demands for the construction of great armaments.

Hon. James A. Tawney, representative in Congress from Minnesota, in a speech at the National Peace Congress in Chicago, May 5, 1909, made the following statements:

> The total expenditures of the United States, England, Germany, and France, during the fiscal year ending June 30, 1908, on account of their armies and navies, approximated, in round numbers, a billion, or ten hundred million, dollars. Add to this the sums expended for the same purpose by other nations of the world, and you will have a grand total cost of armed peace so large that the human mind can scarcely comprehend it. . . .
>
> The average annual appropriations for our army have leaped from less than $24,000,000 for each of the eight years immediately preceding the Spanish War to more than $83,000,000 for each of the eight years ending with the appropriations made at the last session of Congress for the fiscal year 1910.

During the same period the average annual appropriations for our navy have increased from a little more than $27,500,000 to more than $102,400,000—$131,350,854 for 1910–11. In other words, the increase in appropriations for the army for the periods named exceeded $472,000,000, a sum sufficient to cover the whole cost of constructing the Panama Canal, with nearly $150,000,000 to spare. The increase in the sums appropriated for the navy for these same periods is approximately $600,000,000, a sum largely in excess of the total appropriations for the support of our entire government for any fiscal year prior to that of 1898. (See IV, *The Carnegie Peace Fund.*)

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XIV. ECONOMIC CONDITIONS AND THE CONDUCT OF BUSINESS

BUSINESS CONDITIONS IN 1910

S. S. Huebner

The Revival of Business.—Following the financial panic of 1907 and the business depression of 1908 the year 1909 witnessed an active revival in business. The country was blessed with excellent crops, the corn yield amounting to 2,772,000,000 bushels, the wheat crop to 723,000,000 bushels, and nearly all other crops, with the exception of cotton, exceeding the "bumper" yields of 1906. Under the impetus of such crops the general business situation held out only the brightest prospects. The iron business registered for the year a total production of 25,795,000 tons of pig iron, as compared with less than 16,000,000 tons in 1908, a total never before exceeded, and only approached by the prosperous years of 1906 and 1907. New railway construction for the year totaled 6,310 miles or fifty per cent more than in 1908. While the gross earnings of the railroads approximated those of 1908, there was an increase of eleven per cent in the net earnings. Bank clearings reached a total of $165,000,000,000, as compared with $132,000,000,000 for the previous year, thus showing a healthy

CROP PRODUCTION

	1910.	1909.	1908.	1907.	1906.
Corn . . . . bu.	3,121,381,000	2,772,376,000	2,668,651,000	2,592,320,000	2,927,416,091
Winter wheat . . . . "	458,294,000	432,920,000	420,218,000	409,442,000	492,888,004
Spring wheat . . . . "	233,475,000	290,823,000	244,384,000	224,645,000	242,372,966
Oats . . . . "	1,096,396,000	1,007,353,000	807,156,000	754,443,000	964,904,522
Rye . . . . "	32,088,000	32,239,000	31,851,000	31,566,000	33,374,833
Barley . . . . "	158,138,000	170,284,000	166,756,000	153,597,000	178,916,484
Cotton . . . . bales	11,500,000	10,609,668	13,825,457	11,571,966	13,510,982

PRODUCTION OF METALS

	Pig Iron (Tons).		Copper (Lbs.). U. S. Production.		Copper. U. S. Visible Supply.	
	1909.	1910.	1909.	1910.	1909.	1910.
January	1,801,000	2,608,000	112,135,000	116,547,000	122,357,000	141,766,000
February	1,703,000	2,397,000	103,700,000	112,712,000	144,130,000	98,463,000
March	1,832,000	2,615,000	117,058,000	120,067,000	173,284,000	107,187,000
April	1,738,000	2,483,000	113,574,000	117,477,000	182,279,000	123,824,000
May	1,880,000	2,390,000	118,356,000	123,242,000	183,198,000	141,874,000
June	1,929,000	2,265,000	116,567,000	127,219,000	169,848,000	160,315,000
July	2,101,000	2,142,000	118,277,000	118,370,000	154,858,000	168,386,000
August	2,246,000	2,106,000	120,597,000	127,803,000	122,596,000	170,640,000
September . . .	2,385,000	2,054,000	118,023,000	119,519,000	135,196,000	168,881,000
October	2,592,000	. . . .	124,657,000	126,469,000	151,472,000	148,793,000
November . . .	2,547,000	. . . .	121,618,000	. . . .	153,509,000	139,261,000
December	2,635,000	. . . .	117,828,000	. . . .	153,003,000	. . . .

revival in the volume of business transacted. Moreover, call loan rates, which in 1908 had been at or slightly above one per cent, now averaged from two to four per cent, showing that there was a more urgent demand for funds.

The Stock Exchange.—On the stock exchange also the year 1909 was characterized by bullish sentiment. The average price level of ten representative standard stocks used as an index, shows an increase of twenty-two per cent over the average price prevailing in 1908. The total number of shares traded in was 214,632,000, as compared with 197,206,000 in 1908, while the total of new securities listed on the exchange was nearly twice as large as in 1908. In fact, during the year 1909 over $2,424,000,000 of new securities were listed on the stock exchange, an amount greater than was listed in any previous year, with the single exception of 1901.

With these indications of increased business activity apparent on every hand the business community, as judged from the financial and trade press, looked forward to 1910 as a year of active trade and complete recovery from the effects of the financial and trade depression of 1907 and 1908. In the main these bright prospects were not realized. In fact, the month of Jan., 1910, seems to have marked the highest point of the business conditions which prevailed during the year. From that time on there followed a tendency toward dullness and hesitation in many lines of business, especially in the security market and in the iron and steel business. In the following tables a summary is presented of business conditions during the years 1909 and 1910, as shown by those indices which are generally accepted as the truest barometer of industry and trade. The tables relating to the "Stock Market Activity" and including a summary of "Shares of Stock and Bonds Sold," "Average Security Prices," and "New Securities Listed," furnish an idea of the activity prevailing in the security market, and the condition of the investment demand during the year 1910. The tables relating to the "Loans and

	Imports.		Exports.		Balance of Trade.[1]		Bank Clearings Outside New York.		Total Bank Clearings.	
	1909.	1910.	1909.	1910.	1909.	1910.	1909.	1910.	1909.	1910.
	$	$	$	$	$	$	$	$	$	$
January. .	103,607,620	133,658,064	156,682,210	144,015,350	+53,074,590	+10,357,286	5,162,781,000	5,887,868,000	14,047,081,000	17,136,944,000
February.	118,635,807	129,886,000	126,036,204	125,517,540	+ 7,400,397	− 4,368,460	4,367,844,000	4,954,767,000	11,255,550,000	13,105,907,000
March. . . .	133,419,297	162,955,076	139,202,720	143,700,463	+ 5,783,423	−19,254,613	5,128,577,000	5,971,198,000	12,615,416,000	15,017,382,000
April.	122,211,668	133,942,729	125,201,219	133,089,109	+ 2,989,551	− 853,620	5,075,065,000	5,659,725,000	13,689,794,000	14,001,387,000
May.	116,055,903	119,929,608	123,356,706	131,145,428	+ 7,300,803	+11,215,820	4,907,627,000	5,335,942,000	13,003,877,000	13,143,912,000
June.	124,693,497	119,682,945	117,535,393	127,869,263	− 7,158,104	+ 8,186,318	5,038,750,000	5,449,749,000	14,150,453,000	13,810,070,000
July.	112,290,196	117,312,105	109,452,334	114,493,222	− 2,837,862	− 2,818,883	5,145,166,000	5,408,248,000	13,464,908,000	13,286,915,000
August. . .	116,025,936	138,357,780	110,123,679	134,794,355	− 5,902,257	− 3,563,425	4,804,543,000	5,046,135,000	13,490,980,000	11,508,403,000
September	120,941,642	117,271,014	153,890,409	168,858,093	+32,948,767	+51,587,079	5,045,339,000	5,130,652,000	13,523,716,000	11,361,667,000
October. .	126,949,005		198,724,862		+71,775,857		5,798,872,000	5,883,705,000	15,851,214,000	13,787,794,000
November	140,392,012		194,115,271		+53,723,259		5,695,006,000		14,758,582,000	
December.	138,742,292		171,662,197		+32,919,905		5,936,505,000		15,843,243,000	
1909.	$1,475,612,580		$1,728,203,271		+$252,590,691		$62,020,141,000		$165,608,879,000	
1908.	1,116,449,681		1,752,833,247		+636,383,566		59,996,187,000		132,272,067,000	
1907.	1,434,421,425		1,880,851,078		+446,429,653		57,993,565,000		145,175,733,000	
1906.	1,320,501,572		1,798,247,943		+477,741,862		55,280,676,000		159,808,640,000	

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[1] + = balance of exports. − = balance of imports.

XIV. ECONOMIC CONDITIONS AND THE CONDUCT OF BUSINESS

RAILROAD EARNINGS

	Gross.		Net.	
	1909.	1910.	1909.	1910.
January	$49,030,236	$55,828,736	$13,778,393	$13,789,543
February	46,667,832	53,762,366	12,845,919	13,851,838
March	54,171,779	62,370,904	17,503,404	18,873,868
April	51,736,336	59,447,548	15,428,928	15,862,596
May	51,915,459	59,413,970	16,456,045	16,120,936
June	53,546,210	59,385,867	18,429,028	17,305,664
July	55,451,443	58,172,302	17,553,642	16,572,106
August	59,950,979	60,146,579	21,321,413	18,782,231
September	61,189,092		21,978,082	
October	64,216,005		24,433,833	
November	63,821,225		22,740,436	
December	58,547,798		17,646,343	

Idle Cars. (Net Surplus.) Fortnightly Reports.		
	1909.	1910.
January	332,513	38,416
	311,306	26,844
February	301,283	24,975
	300,971	14,309
March	299,240	15,408
	290,868	17,342
April	296,201	25,886
	296,320	77,357
	281,830	96,219
May	284,292	122,593
	272,650	110,661
June	277,274	126,497
	262,117	122,915
July	259,697	142,865
	243,315	133,301
August	207,004	102,781
	157,415	73,679
September	106,677	50,729
	71,373	47,076
	38,806	24,528
October	12,546	13,316
	5,467[1]	7,235
November	3,286[1]	
	12,032	
December	38,887	
	34,300	

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[1] Shortage.

BUILDING CONSTRUCTION (20 CITIES)

	1909.	1910.
January	$35,906,000	$33,443,030
February	42,796,000	35,716,873
March	61,577,000	60,845,215
April	71,435,000	62,839,455
May	66,211,000	51,775,655
June	62,067,000	50,116,725
July	60,388,000	43,291,816
August	48,855,000	42,547,451
September	48,720,000	41,415,868
October	41,810,000	
November	38,063,000	
December	37,208,000	

FAILURES

	Liabilities.		Number.	
	1909.	1910.	1909.	1910.
	$14,073,264	$17,611,648	1,317	1,243
	13,500,255	16,475,238	990	1,009
	11,602,314	11,322,328	1,001	1,050
	17,963,197	24,349,636	998	874
	13,241,119	13,337,578	902	885
	9,903,233	8,762,385	950	845
	8,341,045	17,042,781	946	865
	8,401,990	11,778,436	857	950
	10,894,628	16,157,775	810	840
	10,088,535	12,237,371	941	867
	10,585,899		982	
	11,939,238		1,174	
Total, 1909	$154,603,465		12,924	
1908	220,787,939		15,690	
1907	197,395,225		11,725	
1906	119,201,575		10,682	

Deposits of the New York Clearing House Banks" and the "Domestic and Foreign Money Rates" will explain the conditions surrounding the money market during 1910; while the tables on "Bank Clearings," "Foreign Trade," "Crop Production," "Railway Gross and Net Earnings," "Idle Cars," "Pig Iron and Copper Production," "Building Construction," "Number of Business Failures and Amount of Liabilities," will furnish a view of the year's activity in mercantile and manufacturing lines. For

XIV. ECONOMIC CONDITIONS AND THE CONDUCT OF BUSINESS

STOCK MARKET ACTIVITY

	Total Transactions.				Average Security Prices.			
	Shares of Stock.		Bond Sales.		10 Leading Stocks.		10 Leading Bonds.	
	1909.	1910.	1909.	1910.	1909.	1910.	1909.	1910.
January	17,275,500	24,538,649	137,762,000	86,822,500	164.1	174.8	101.8	100.3
February	12,337,199	16,012,626	111,434,600	64,170,500	161.1	173.7	102.6	99.8
March	13,650,595	14,988,179	84,381,000	75,773,700	160.8	172.7	102.0	99.8
April	19,055,618	14,089,639	138,748,200	51,287,500	169.5	169.8	102.1	98.5
May	16,495,230	11,918,978	117,477,500	41,919,500	176.7	163.9	102.2	97.9
June	20,322,230	16,292,870	135,761,000	48,291,000	178.1	159.1	101.9	97.4
July	12,806.965	14,254,713	94,530,500	38,099,950	179.3	153.8	102.0	96.8
August	24,637,783	10,392,788	114,322,000	31,182,000	185.5	155.2	101.8	96.9
September	19,981,675	7,673,529	91,882,200	46,030,200	185.1	155.7	101.5	97.9
October	21,739,514	13,452,381	90,371,500	56,970,000	182.1	160.6	100.3	98.8
November	18,769,870		88,195,500		179.0	161.0	100.1	
December	17,560,015		112,304,000		178.2		100.5	

	New Securities Listed.			Total Shares.	Average Price 10 Stocks.		New Securities Listed.
	1909.	1910.			High.	Low.	
January	$455,133,100	$143,983,200	1909	$214,632,194	189	154	$2,424,482,585
February	201,259,000	161,282,640	1908	197,206,346	164	126	1,386,885,450
March	124,655,300	525,821,700	1907	196,438,824	182	119	996,845,053
April	124,636,500	114,749,000	1906	284,298,010	205	163	1,234,667,950
May	465,478,320	174,297,300					
June	141,417,000	152,566,480					
July	118,694,700	24,565,500					
August	173,703,000	9,500,000					
September	119,931,000	71,824,000					
October	128,272,650	115,219,000					
November	106,324,000						
December	230,122,300						

MONEY MARKET CONDITIONS

	Loans. (000) Omitted.		New York Clearing House Banks.			
			Deposits. (000) omitted.		Surplus Reserves. (000) omitted.	
	1909.	1910.	1909.	1910.	1909.	1910.
January	$1,315,400	$1,201,930	$1,324,600	$1,206,046	$25,400	$22,708
February	1,326,300	1,225,851	1,394,400	1,241,581	11,800	24,819
March	1,304,500	1,243,014	1,357,600	1,244,390	14,200	12,128
April	1,324,500	1,231,054	1,360,300	1,217,893	11,300	10,001
May	1,338,900	1,187,506	1,392,400	1,174,365	15,600	19,484
June	1,354,300	1,195,891	1,423,900	1,191,124	22,200	24,654
July	1,346,700	1,197,177	1,425,700	1,192,569	33,800	29,242
August	1,356,800	1,229,636	1,416,350	1,261,304	22,050	51,298
September	1,335,424	1,267,163	1,368,677	1,280,182	9,819	28,449
October	1,258,900	1,255,649	1,264,100	1,230,067	9,980	8,981
November	1,218,300		1,204,850		7,650	
December	1,191,585		1,169,005		8,890	

MONEY MARKET CONDITIONS—*Continued*

	Money Rates.				Foreign Rates.		Gold Movements.	
	New York Monthly Average.				Average Bank Rates, Eng., France and Germany.			
	1909.		1910.		1909.	1910.	1909.	1910.
	4 Mos.	Call.	4 Mos.	Call.				
January....	4½	1¾	4¾	4½	3¼	3⅞	+ 4,445,173	+ 4,031,775
February...	3¾	2¼	4½	2¾	3¼	3½	+ 5,284,401	— 125,982
March.....	3¾	1⅞	4⅔	2⅞	3⅙	3½	+16,090,814	— 2,676,900
April.......	3¾	2	4¾	3⅕	3	3⅔	+ 2,988,887	+34,182,707
May.......	3¾	1¾	4¾	3¾	3	3⅔	+ 8,907,544	— 2,425,660
June.......	3⅞	1⅞	4⅞	2¾	3	3⅓	+ 5,928,711	— 2,977,570
July.......	3⅝	1⅘	5¼	2½	3	3⅓	+13,391,897	— 9,454,198
August.....	4⅜	2⅛	5¾	1½	3	3⅓	+ 3,879,000	— 9,668,183
September..	4⅝	2½	5¾	2	3	3⅓	+ 5,195,484	— 1,659,242
October....	5⅜	3½	5¾	3⅙	4	4⅙	+ 2,345,238	
November..	5½	4⅝			4¼		+11,778,644	
December..	5¾	5			4¼		+ 8,495,532	

+ = excess of exports. — = excess of imports.

purposes of comparison the data for these barometric indices is given by months for the years 1909 and 1910, and to make possible a further comparison, the totals for the several items, wherever possible, are also given for the years 1906, 1907, and 1908.[1]

Agriculture. — An examination of the first table shows that the production of agricultural commodities in 1910, when considered as a whole, exceeds that of 1909 by about ten per cent. The corn crop proved to be the largest in our history, amounting to 3,121,381,000 bushels. Winter wheat shows a total of 458,294,000 bushels, or approximately 25,000,000 more than in 1909, although the spring wheat crop fell short, as compared with the previous year, by approximately 57,000,000 bushels. Oats also passed the 1,000,000,000 bushel mark, exceeding the 1909 crop by almost 90,000,000 bushels. The cotton crop, although not nearly equal to the crops of 1904, 1906, and 1908, nevertheless shows an increase over 1909, the latest estimate placing this year's crop at 11,500,000 bales. (See XVIII, *Agriculture and Fisheries.*)

A crop of such proportions would naturally insure a heavy tonnage for the railways of the country. During the first eight months of 1910 the gross earnings of ten leading American railway systems totaled $468,000,000, or an increase of $46,000,000 over the gross earnings of the same systems for the same months of 1909. Idle-car figures also serve to show the increased freight traffic on our railroads. The fortnightly reports of the American Railway Association show an average of over 300,000 idle cars in the early part of 1909. This large number, however, gradually decreased as the year advanced until in the busy crop-moving month of Oct. an actual shortage of over 5,000 cars was reported. During 1910 the average number of idle cars is much smaller than in 1909, being much below 100,000. In fact, the only time when a surplus of 100,000 idle cars existed was just previous to the crop-moving season. (See XXI, *Trade and Transportation.*)

Foreign Trade.—Similarly, the foreign trade returns for the year 1910 fail to indicate any serious setback in business, although for most of the year they do not indicate a healthy monetary situation. Nine months' returns for 1910 show imports of the value of $1,173,000,000 and exports of $1,223,000,000, as compared respectively with $1,068,000,000 and $1,161,000,000 for the corresponding period in 1909. In the volume of foreign trade these figures show a substantial increase, but upon further analysis they reveal a very unusual trend. For eight months, to Sept. 1, 1910, the imports actually exceeded the exports in value, a situation which this country has not experienced since 1888. This relative position of imports and exports is most unusual, since America is indebted to Europe for several hundred millions of dollars annually to cover such important payments as interest on foreign investments in America, payments of freight rates earned by foreign ship owners, and expenditures of American tourists abroad. During the last few months, however, indications seem to show that the relative position of imports and exports is rapidly righting itself. The balance of exports in our favor for the month of Sept. last amounted to $51,587,000. (See XXI, *Trade and Transportation.*)

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[1] The author is indebted for many of the statistics presented in the foregoing tables to the compilations prepared by Roger W. Babson.

Bank Clearings.—The bank clearings of the country, usually regarded as an excellent barometric index of trade conditions, also show that business in our interior states was not lacking in activity. To show the volume of this trade the bank clearings outside of the city of New York may be used (New York clearings being excluded because they reflect so largely the speculative activity of the New York security market). For the first ten months of 1910 these bank clearings outside of New York City amounted to $54,720,000,000, as compared with $50,470,000,000 for the first ten months of 1909, or an increase of eight and one half per cent. (See XII, *Public Finance, Banking and Insurance.*)

But despite the favorable factors just enumerated, the industrial situation during 1910 had many difficulties with which to contend, and may be said to have been marked throughout the year by a waiting attitude. Corporations found it extremely difficult to raise funds on even the best-secured bonds, and in many cases had the European money market as their only resource for borrowing purposes. With the exception of call loans protected by liquid collateral, high money rates for commercial purposes proved the rule throughout the year. Moreover, the high range of prices prevailing on almost all essential commodities tended greatly to raise the cost of living, which in turn produced general discontent among the laboring population, thus resulting in many strikes, and making necessary the raising of the standard of wages. The extremely high price of land and rents, together with the increased cost of labor also contributed to the burdens of manufacturing and transportation companies by increasing the cost of materials. The railway industry of the country exemplifies the effects of this increase in prices. While their gross earnings have shown a tendency either to hold the level of 1908 or even to improve, the net earnings have, in the case of many systems shown a sharp tendency to decline, with the result that in all sections of the country the railway managements have had recourse to the policy of protecting net earnings by increasing freight rates on certain classes of goods. These proposed increases in rates, however, have been suspended for months by the interstate commerce commission until their reasonableness can be ascertained, with the result that the railways are assuming a waiting attitude, and for months have pursued the policy of ordering materials and equipment only in the most sparing manner. This attitude on the part of the railroads means such small orders to steel companies and equipment companies that most of them are running far short of their capacity.

Mercantile Business.—What applies to the railway and equipment companies is also true in the case of many lines of mercantile business, where a policy of acquiring small stocks of goods, just enough to meet current demands, has prevailed for many months. To make matters worse, the year 1910 has been marked by much political unrest, and a general feeling among business men and investors that there is too much uncertainty as regards prospective tariff legislation, and the decision of the famous Standard Oil and American Tobacco cases to warrant taking the initiative in making new commitments either in investments or in business undertakings. (See XX, *Manufactures.*)

The Iron Industry. — The factors just enumerated have exerted a marked influence upon a number of industries during 1910. The iron industry may be cited as an example. In Jan., 1909, 1,800,000 tons of pig iron were produced, and this amount increased month by month until March, 1910, when the production totaled 2,615,000 tons. This month, however, appeared to be the turning point and marked the beginning of a policy of restriction of output which continued unabated, the production for Sept., 1910, amounting to only 2,054,000 tons. At the time of the preparation of this review the United States Steel Corporation is reported as running only sixty-five per cent capacity, and has just announced what is almost the lowest "unfilled tonnage" recorded since its organization.

This dullness in the iron and steel business is traceable to a number of causes. Figures were given showing that the gross earnings of ten leading railway systems for eight months of 1910 had exceeded the corresponding figure for 1909 by $46,000,000. During the same period the net earnings for the same roads were only $131,160,000 or a decrease of $2,160,000, as compared with 1909. In view of the anomalous position of American railroads, that is to say, with gross earnings increasing while net earnings are gradually falling off, they have refused to take the initiative in making replacements and improvements.

Building.—Building statistics further explain the decrease in steel production, since the building trades are the source of a considerable demand for structural steel. The construction of buildings in twenty leading cities for the first nine months of 1910 shows a decrease of $76,000,000, as compared with a total of $497,955,000 recorded for the corresponding period of 1909.

As a result of such decreased consumption of steel products there has followed a decrease in the price of such products. Beginning the year with an average price of $18.94 per ton, the price has decreased almost monthly until in Oct. it stood at $15.88. This fall in the price of steel products seems to have stimulated European demand, and it appears likely that the present year will be a record one for steel exports. During the first nine months of the year the iron and steel exports amounted to 1,063,000 tons, as compared with 838,000 tons for the corresponding period of 1909.

Copper. — Unlike iron production, the production of copper during 1910 was larger than for the preceding year. The production for ten months to Oct. 31st amounted to 1,206,416,000 pounds, as compared with 1,162,944,000 pounds for the same period of 1909. The figures of the Copper Producers' Association for ten months show that domestic consumption this year equaled 644,000,000 pounds, as compared with 586,000,000 pounds last year. The price of the metal, however, has been an unsatisfactory one. Throughout the year 1910 the price of copper has ranged between 12 and 13 cents per pound, and has only recently shown a tendency to harden and rise above 13 cents.

Business Failures. — Turning now to the statistics of business failures, we find that these failures for the first ten months of 1910 amounted to 9,428, as compared with 9,712 for the corresponding period of 1909. The larger liabilities involved, as regards the year 1910, are explained by the failure of a few large concerns whose troubles date back to the financial panic of 1907.

High Prices.—Probably the most unfavorable factor in the business situation, as regards 1910, is the high-price level at which practically all commodities are selling. Bradstreet's index number for Jan., 1910, reached the highest mark yet attained, viz., $9.2310. Although this index price has been gradually falling to a lower level throughout the year, it still stands at the abnormally high figure of $8.8753. A glance at the course of Bradstreet's index number over a series of years will show the high-price level at which commodities are selling. In 1896 this index point stood at the low figure of $5.1924, which is traceable to the drastic period of liquidation through which all business passed following the panic of 1893. By 1898 the index number had risen to $6.5713, by 1902 to $7.8759, by 1905 to $8.0987, by 1909 to $8.5153, and at present stands at $8.8753. These high prices together with the lack of the saving instinct on the part of the American people, it is generally maintained, has affected the entire business structure of the country. (See XIV, *Cost of Living and Index Numbers.*) On the one hand it has been responsible for the demand of the wage-earning classes for higher wages, whereas on the other hand it has made it almost impossible for corporations to raise the capital necessary for proper improvements.

High prices also require larger extensions of credit to finance the movement of crops or the holding of lands and other property on speculation, with the result that the banks, especially in the West, have been in an overloaned condition throughout practically the whole of 1910. The report of the comptroller of the currency, giving the condition of the national banks on Sept. 1st, shows that the proportion of loans to deposits stood at 106.82 per cent, a figure exceeded only twice since 1902, viz., 1904 and 1907, when the percentages stood respectively 108.67 per cent and 109.03 per cent. Time loans throughout the year have been at high rates of interest, Feb. being the only month of the year when the average interest rate has been as low as the yearly average for 1909, namely, four and a half per cent. For the last four months (to Nov., 1910) time loans have averaged five and three quarters per cent.

Turning now to the stock and bond market, we find that the hesitancy noted in other lines of commercial activity has here held full sway; 1909 was a year of high prices for securities, and was marked by active trading in both stocks and bonds. The months of Aug., Sept., and Oct. witnessed an average price of $182 for ten leading stocks, as contrasted with $154 in July of 1910. Bond sales developed a tendency toward dullness early in 1909, which dullness increased gradually as the year progressed. Since Jan., 1910, monthly bond sales for the first ten months have averaged only slightly over $50,000,000.

Stock sales have also shown the same tendency, and only three months of the year, Jan., Feb., and June, have transactions aggregating over 16,000,000 shares. Sept. of 1910 witnessed the most inactive market during the last six years, a total of only 7,673,000 shares having been traded in on the New York Stock Exchange, as compared with dealings in Jan. of over 24,000,000 shares. Little interest in securities is manifested by the general public, this lack of interest being fully as evident in the bond market as the stock market. The average price of ten leading bonds, for example, on the New York Stock Exchange declined from 100.3 in Jan. to 96.8 in July, the same bonds averaging 102.6 in Feb. of 1909.

Short-term Notes.—This condition in the security market has caused a hesitancy on the part of railroad and industrial corporations to provide for new capital needs through bond issues at the high rates demanded. As a result the new capital needs are being met largely by issues of short-term notes at high interest rates. The most significant fact of all, however, is that new capital needs are not being met to any great extent, but are being postponed. The figures for new securities listed on the New York Stock Exchange show an abnormal decrease for 1910, as compared with 1909. In the month of Aug., 1910, the unusually small amount of $9,500,000 of new securities was listed on the New York Stock Exchange. As illustrating the investment demand, we may compare this small amount with the large total of $465,478,000 of securities listed in May, 1909. The total listings for the first ten months of 1910 amounted to $1,493,000,000, as compared with $2,053,000,000 for the corresponding period of 1909. (See XIV, *Corporations.*)

DEALING IN FUTURES

Bucket Shops.—The last two years have been productive of much legislation on the subject of speculation. Attention has especially been devoted to the evils connected with it, and more especially to "bucket shops." The conviction seemed to prevail that many of the evils connected with high prices and with the fluctuation of prices were associated with speculation in the security and produce markets. The agitation following this widespread belief has resulted in much legislation or attempted legislation, both state and national, dealing with the situation.

The Kansas Law.—In the year 1909 no fewer than six states passed laws directed against the practice of "bucket shopping." Kansas, by the act of March 5, 1909, amended and repealed the act of 1901, and made the maintenance of a "bucket shop" a felony. A "bucket shop" is defined as a place where contracts are made for the purchase or sale of securities or commodities, based on prices obtained from *bona-fide* transactions on an exchange; or where the contracts may be terminated when the market quotations reach a certain figure; or where settlement is made by the payment of differences without intending to deliver the securities or commodities. To help enforce the law, it is provided that telegraph and telephone companies, permitting the use of their properties for such purposes, or anyone aiding in such transactions, are guilty of a felony. It also becomes the duty of a broker or commission merchant to furnish to his principal on demand a written statement giving the names of the parties to the contract and the time, place, and price at which the contract was made.

New Hampshire.—By an act of March 10, 1909, New Hampshire enacted a law similar in the provisions to the Kansas act. To abolish "bucket shopping" the law is directed against buying on margins or otherwise of securities or commodities, where there is no intention of receiving or delivering the goods, or where there is only pretended buying or selling on margin. Proof that articles purchased were not received, or those sold not delivered, is considered as evidence of illegality. Brokers and commission merchants, according to the law, can be compelled to state in writing the names of the contracting parties, and the place, time, and price of the transaction.

Arizona, in an act passed March 11, 1909, also placed upon its statute books a law prohibiting the operation of "bucket shops." This law, after defining the nature of "bucket-shopping" operations, places the burden of proof as to "*bona-fide* intention" on the defendant. The law states further that it is not intended to interfere with any regular exchange or board of trade. In much the same manner the states of Iowa, Tennessee, and Wisconsin have enacted legislation against the "bucket shopping" of orders. In the main, these acts embody substantially the provisions already noted, and in most cases the maintenance of a "bucket shop" is made a misdemeanor.

Wisconsin.—The law of Wisconsin, passed on June 10, 1909, however, goes farther than the other laws, in so far that it provides for a sentence of from one to ten years imprisonment for anyone who shall deal in securities or commodities on a margin to cover future quotations in prices of such goods. The State of Wisconsin also addressed a joint resolution to its delegates in Congress, reciting the evils of grain and stock gambling, and instructing them to extend their efforts to obtain a thorough stock and produce exchange investigation.

"Futures."—While the above-mentioned laws deal ostensibly with the subject of "bucket shops," much of the agitation in recent years, especially in western and southern states, has been directed against margin dealings, or the buying and selling of "futures" on our regular organized exchanges. This agitation resulted in 1910 in the introduction of six bills in the House of Representatives. The fact that of these six bills not one became a law, tends to demonstrate that they were supported more often by enthusiasm than by reasonableness or economic necessity. All of these bills were directed against the use of "options," "short sales," and transactions in "futures." The first bill introduced on Jan. 5, 1910, is directed against "options" and "futures," the latter term being defined broadly, so as to include short selling of agricultural products. Otherwise the usual meaning is applied to the terms—"options" being contracts which may or may not be exercised by the holder, and "futures" being contracts for the delivery of goods at some specified time in the future, which goods the seller does not possess or own at the time the contract is made. The bill is confined to dealings in agricultural products, the various articles being enumerated. An extended proviso in the bill recites that it shall not be applied to certain enumerated "future" contracts, such as contracts to deliver goods to the government, national, state, or municipal; contracts by the farmer to deliver part of his produce as rent or payment for land, or contracts with a manufacturer to deliver to him at a future time the raw materials for purposes of manufacture, provided such contracts are not made on an exchange or board of trade, and are not subject to its rules.

It is unnecessary to outline in detail all the remaining bills which were introduced in the House of Representatives. Just as in the preceding bill, one and all were directed against "future" contracts in agricultural commodities. These other bills were introduced in the House of Representatives in 1910, as follows: Jan. 14th, Feb. 22d, March 29th, April 5th, and April 16th. Although differing somewhat in minor particulars, they resembled each other in the main. The bill of March 29, 1910, however, deserves special mention, in so far that it attempts to accomplish its end by forbidding to the speculator the use of the ordinary instruments of commerce in carrying out "future" contracts. The bill forbids the use of the mails, interstate commerce, and banking facilities. Telephone and telegraph companies are surrounded with numerous restrictions in the matter of transmission of messages, and banks and trust companies are prohibited from making loans to parties engaged in such contracts.

Necessity for "Future" Contracts.—Reviewed in their entirety, the evident weakness of these bills lies in their failure to see any legitimate use in speculation as conducted on our organized produce exchanges. "Options" and "futures" are declared to be in restraint of trade, to be illegal and void, and their consummation to constitute a felony. This viewpoint, however, overlooks the fact that it is absolutely essential to provide for the future delivery of our leading agricultural commodities, manufacturers finding it necessary to contract ahead of time on our leading produce exchanges for the delivery at a specified time of a definite amount of produce at a stipulated price—in many cases the manufacturer desiring that such contracts be entered into by dealers before the produce is actually in existence. These bills also overlook the absolute necessity of hedging operations to protect manufacturers, commission men, and others, against speculative losses on their holdings of produce, which result from a decline in the price of the commodity.

STOCK AND PRODUCE EXCHANGES

The New York Stock Exchange.—The report of the committee appointed by Gov. Hughes in 1907 to investigate the subject of speculation on stock and produce exchanges recommended a number of changes in the rules and regulations of the exchanges themselves. While conservative in its attitude toward exchanges, the report makes various recommendations which, if carried out, would tend to create greater confidence on the part of the public in the usefulness of such exchanges. Thus far the report has had little influence in causing the rules of the leading produce exchanges to be altered, but a number of important changes have been introduced in the rules of the New York Stock Exchange which will have a far-reaching effect, and represent a sincere effort on the part of the best element in Wall Street to conserve those functions which go to make an organized security market a great factor in the business life of the country.

During the year 1910 the governors of the exchange adopted at least five new rules affecting the conduct of business. The most important of these rules relates to bids and offers, and took effect April 4, 1910. Prior to the adoption of this rule, any broker could offer to buy or sell a large block of securities, and refuse to accept offers for less than the total amount. This practice led to abuses through manipulation of prices, since dealers could by this means establish quotations for a certain security above or below its previous price, by simply offering to give or to take an amount of the security so large that no one would be in a position to offer or to receive the same. According to the present ruling the recognized quotation on stocks shall be public bids and offers on lots of 100 shares and "all bids and offers on larger amounts shall be considered to be for any part thereof, in lots of 100 shares or of multiples thereof, whether so stated in the bid or offer or not." This means that a broker offering to buy 1,000 shares of a particular stock at a price above the current quotation shall be compelled to accept all offers of 100 shares or multiples thereof until the entire order of 1,000 shares has been filled.

In addition to this rule relating to bids and offers, a further provision is made to the effect that "if a bid is made for a larger lot of stock above the price at which smaller lots are offered, or if a transaction is made in a larger lot above the price at which smaller lots are offered, such bidder or buyer shall be compelled to buy any or all of the smaller lots which were publicly offered at the time, at the lower price, up to the amount of the bid for the larger lot. If the bid for the larger lot is accepted, and the buyer is unwilling to buy more, the seller must give up to the members who were publicly offering to sell at the lower price such amounts as they were publicly offering to sell at the lower price, if such claim is made immediately." A similar rule applies in case an offer is made to sell a larger lot of stock below the price which is bid for smaller lots. It is expressly provided that the foregoing provisions shall not apply to lots of less than 100 shares, "nor to active openings when bids and offers are simultaneous."

Another rule of importance which the New York Stock Exchange adopted in 1910 relates to transactions of its members with themselves. This rule provides "that any member of the exchange who, while acting as broker, either as a 'specialist' or otherwise, shall buy or sell directly or indirectly for his own account, for account of a partner, or for any account in which he has an interest, securities, the order for the purchase or sale of which has been accepted by him for execution, shall be deemed guilty of conduct or proceeding inconsistent with just and equitable principles of trade, and shall be subject to the penalties provided in Article XVII, Section 6, of the Constitution."

By resolution of June 23, 1897, the New York Stock Exchange prohibited its members from accepting accounts from clerks or employees of members of the exchange without the written consent of the employer in each case. By a new rule, which went into effect April 4, 1910, this prohibition is extended to the clerks and employees of the exchange itself, all banks, trust companies, private bankers, and insurance companies.

Unlisted Securities.—By a fourth amendment to its rules, adopted April 21, 1910, the New York Stock Exchange abolished the department of unlisted securities. For a long time the "unlisted" department of the exchange, as contrasted with the "listed" department, was the source of criticism, since certain securities which would not comply with the rules of the listed department secured access to the unlisted department. According to the new rule the exchange will henceforth require that all securities whatsoever which are dealt in on the exchange must conform to the requirements for information and the publication of financial reports specified for securities listed in the listed department, and any company refusing such information shall not be allowed the privilege of the market afforded by the exchange.

Furthermore, the stock exchange

adopted new rules enlarging the scope of the law committee's powers. This committee "is now empowered, whenever the committee shall deem it to be for the interests of the exchange, to examine into the dealings of any member of the exchange." This provision gives the committee powers next in rank to those of the governing committee itself, and will be largely instrumental in doing away with the acceptance by brokers of doubtful or dangerous margin business.

PATENTS AND TRADE-MARKS

Trade-marks.—The law of Feb. 20, 1905, concerning trade-marks, has been amended three times—namely, on May 4, 1906, March 2, 1907, and Feb. 18, 1909. The act provides for the registration of trade-marks in the following manner: Application must first be made for registration by the party who owns the trade-mark, which party must reside in the United States or in some country that extends a like privilege to the citizens of the United States. The trade-mark to be registered must actually have been used in commerce prior to the filing of the application, which comprises a petition, statement, and declaration, and a drawing of the trade-mark. The application having been filed, it is examined with respect to any previous trade-marks of like nature, and, if it is found that the same is entitled to registration, it is published in the *Official Gazette* for thirty days. If, at the end of this time, there is no opposition to the registration, it is reëxamined, and if all necessary conditions have been fulfilled, a certificate of registration is issued to the applicant. This certificate of registration is *prima-facie* evidence of the ownership of the trade-mark. It is provided in the act, as it now stands, that certificates of registration can be canceled under certain conditions. Furthermore, the act enumerates certain things which cannot be trade-marked, such as the insignia of fraternal organizations, anything which bears close resemblance to some other trade-mark, or the picture of a living person, except with the consent of the person. Full information concerning the statutes and rules of the patent office regarding the registration of trade-marks may be obtained gratis from the commissioner of patents, Washington, D. C.

Patents.—Under the patent laws of the United States any person who has invented any new or useful art or process, or any improvement thereon, may obtain a patent for the same, application being made to the commissioner of patents. This application comprises, first, a petition for the issuance of the patent; second, a specification and claim describing the invention; third, a drawing where possible, and fourth, an oath declaring the inventor's citizenship and his belief that he is the first and original inventor of the matter to be patented. Applications are classified at the patent office according to the arts to which they relate, and these in each case are examined in the order in which they are filed. Where reasons are given by the examiner for the rejection of a patent the applicant may amend his application. In case of rejection, however, the applicant may appeal to the examiners in chief, the commissioner of patents himself, or finally, to the Court of Appeals of the District of Columbia. By a new law, effective July 1, 1910, *caveats* for the protection of incomplete inventions are no longer received in the patent office, and the law repeals a previous statute to that effect. The same act also provides that the holder of a patent, in case he is not an officer or employee of the United States Government, may sue in the Court of Claims of the United States for infringement thereof.

THE BANKRUPTCY LAW

The present bankruptcy law has been in existence since 1898, and subsequent to its passage has been amended on Feb. 5, 1903; June 15, 1906; and June 25, 1910. The results accomplished by the last amendment have been long demanded, and are as follows: First, the question of compensation for trustees and receivers is settled on an equitable and scientific basis. Heretofore, no provision existed in the law concerning the compensation of receivers, and it was expected that such officers would be paid by the creditors, and their remuneration definitely stated, with the result that the compensation of receivers was limited only by the will of the court. According to the new law the basis of compensation is a commission on the amounts of money paid over to the creditors, arranged in the following manner:

(1) *Commissions of Trustees:*

Six per cent on amounts of $500 or less.

Four per cent on amounts of $500 to $1,500.

Two per cent on amounts of $1,500 to $10,000.

One per cent on amounts of $10,000 or over.

(2) *Commissions of Receivers and Marshals* are graded according to the above-mentioned rules.

(3) Additional compensation is to be allowed for conducting the business, the percentage here being same as outlined under No. 1.

The new law is expected to do away with gross extravagance in the administration of bankrupt estates, and also to remove the incentive for the prolongation of receiverships, as well as to put the administration of such estates into the hands of trustees elected by the creditors, rather than those appointed by the courts.

Voluntary Bankruptcy.—The new law further extends and perfects the provision in the bankruptcy law regarding voluntary bankruptcy. Formerly no corporation was allowed to go into voluntary bankruptcy. The amended provision permits all persons except municipal, railroad, banking, and insurance corporations, to become voluntary bankrupts. It is expected that this section of the law will prove beneficial in so far that it will lessen the burden of expense and delay involved in the filing of involuntary petitions in bankruptcy in the case of corporations. The act expressly states that this "voluntary bankruptcy of a corporation shall not release its officers, directors, or stockholders, as such, from any liability under the laws of a state or territory."

Composition With Creditors. — A further important section of the law provides for the composition of a bankrupt with his creditors before adjudication. Formerly composition could be obtained only after the debtor had been adjudged a bankrupt by a court, and there necessarily attached to his name the stigma of being a bankrupt. Under the new plan the debtor is encouraged to attempt a settlement with his creditors under the supervision of the court, and in this respect it is provided that, when a sufficient number of creditors have assented to such a plan, this method of settlement becomes compulsory. It removes the evil of settlements outside a court, where different percentages have often been paid to the different creditors owing to some standing out longer than others.

Section 14 of the old law has been amended so as to permit trustees, upon the request of creditors, to oppose an application for discharge of the bankrupt. In order that all creditors be apprised of such application for discharge, it has been further provided that thirty days' notice must be given them before such discharge takes place. The previous practice allowed discharge of the bankrupt without notice to creditors.

Secret Liens. — The amendments also deal with the complicated question of secret liens, and their methods of taking precedence. It is provided that if the transfer of the property and the recording of the transfer have taken place within four months of the filing of the petition of bankruptcy, and it can be shown that insolvency existed at the time of such transfer and record, then such transfer shall not be considered to hold preference over others, but the judgment will be voidable by the trustee, and he may recover the property or its value from such person.

PRICES

THOMAS GIBSON

The Cost of Living.—That prices of commodities have been advancing rapidly for many years is a well-known fact. It is not a theory, as we have statistics at hand, reduced to the form of index numbers, which show us absolutely the course of general prices. There have been three reversals of this trend during the last twenty years; but such reversals were due to panic conditions and can only be considered as fluctuations. In the period of depression which extended from 1892 to 1896, a violent decline in general prices occurred and the so-called panics of 1903 and 1907 witnessed moderate reversals of the upward trend. But despite these checks the price of food, clothing, minerals, and other necessities has risen from 91.6, in 1890, to 112.8 on Oct. 1, 1910; and from the low point established in 1897 (72.5) to the high point of 1910 (120.6) there was an advance of no less than sixty-six per cent.[1]

The advancing trend being demonstrated, we immediately ask ourselves two questions: what is causing the advance and what are the specific effects on the business and labor worlds? If we can satisfactorily determine the causes we can arrive at conclusions as to their endurance or dissipation and arrange our affairs accordingly. Even with such knowledge we may not be able to change the conditions or check the advancing prices—such a change might not be expedient or necessary—but we would know how to prepare for a continuance of the swing.

As is always the case when a great economic problem presents itself, there is marked diversity of opinion among scientists and economists. The general acceptation of the causes for higher prices is in about the following order:

(1) Increasing gold production.
(2) Supply and demand.
(3) Monopolies.
(4) Protective tariffs.
(5) Extravagance and an increase in the standard of living.
(6) Demands of labor.
(7) Urban congestion at the expense of agricultural pursuits.
(8) Population growing more rapidly than production and the exhaustion of natural resources.

Many students might put No. 8 at the top, or No. 1 at the bottom, or arrange the influences according to individual opinion as to their importance. They are here set down according to the ideas gained from reading and conversation with numerous observers. Taking the ten best posted and most capable men with whom I have had the good fortune to discuss this momentous question, I do not know of any two who are wholly in accord on the subject. They either adopt one factor outright as the great and only cause, or combine two or more of them as equally important, or again consider practically all of them contributory. Byron W. Holt supports the increasing gold supply vigorously and intelligently; Dr. Selwyn-Brown attributes the advancing trend to supply and demand; W. R. Ingalls, of *The Engineering and Mining Journal*, states that "the rise in prices is due to many and complex causes whereof the mean proportional cannot be easily determined." The United States Senate minority report attributes the rise in prices (or rather the high cost of living, which is much the same thing) to the tariff, trusts, and increased money supply. And so on through a long list of doctors who acknowledge a disease, but cannot agree as to diagnosis or remedy.

Regardless of divergence or division of opinion, none of our leading economists hold out much hope of any sustained reversal of the upward trend. If the increasing supply of gold is the prime cause, we can look for no relief in that quarter for many years to come. Dr. Selwyn-Brown a year ago, in defending the supply and demand theory, concludes that "there is no possibility of a check to the general advancement of prices. The prices of specific articles may vary spasmodically; but mankind is destined to progress more rapidly in the future than in the past, and the hordes of Asia are likely soon to be civilized. Such progress and advancement must in the future as in the past become reflected in demand and prices—prices must continue to advance."

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[1] The Dun index number is employed from 1890 to 1907, and the Gibson number thereafter, as explained later.

A few observers have contended that if the trouble is due to extravagance or tariffs, the cure will be forthcoming. Possibly so—in time. But we have made changes in our tariffs and had severe lessons of enforced economy in the last two or three decades; and the advance in prices goes merrily on.

What will be the financial and social effects of a continuing upward trend in prices? If prices continue to rise we will eventually encounter a higher level of interest rates and consequently a lower level of prices for bonds and other long-time obligations with a fixed rate of income. This is a simple proposition. If we loan money on such securities, and when the capital is returned to us ten or twenty years later badly impaired in its purchasing power because of the advance in things money will buy, we have lost a large part of the interest received.

If prices, including the price of labor, continue to rise, thereby increasing the expenses of railroad corporations or other corporations whose rates are regulated by law while the product they sell advances grudgingly or remains at a standstill, their profits will be rapidly reduced. The corporations owning property or their own source of supplies will benefit according to what they own. The industrial corporation which can advance the selling price of its products freely to overcome higher prices of materials is not injured and sometimes benefits by higher prices.

If prices continue to rise, we will certainly see continued discontent among the laboring classes, for wages do not rise as rapidly as does the cost of living; and many corporations, the railroads in particular, will be compelled to refuse the demands of labor, through necessity rather than through choice.

If prices continue to rise, speculation will be encouraged at the expense of investment. The investor who could live comfortably on his income from gilt-edged bonds a few years ago, now finds that he must have a larger return on his capital and takes what appears to him the only possible road out. He buys securities which pay a higher rate of return and makes this change at the expense of stability. This has been going on for some time. These are the most salient and certain effects of advancing prices. There are others of minor importance.

We now ask "what is the cure?" Revolution will not do it, for revolution would not reach the root of the trouble and the great forces which are bringing about these changes would pause, look at the revolution for a few days and then walk on. Evolution will do it, but evolution is slow. We must help evolution. We must be the physician who assists nature and the name of our true and effective panacea is *Education.* The recent growth of education is gratifying—it is astounding. Everywhere we find its influence. People who, a few years ago bought magazines for the purpose of amusing themselves with pictures and fiction, now pick out those which discuss the questions of the day. We cannot figure that the magazines are producing such matter for any reason save that it is demanded by their readers. They are not scientists or economists, but people who want to learn—and they are learning.

To students who wish to examine in detail the history of prices and the cost of living a card to the chief bibliographer of the Library of Congress, H. H. B. Meyer, will bring a list of references to all the published works of importance.

The Massachusetts Report. — The Massachusetts Legislature established a commission to investigate and report on the subject of the cost of living. The report was submitted May 2, 1910, and the unanimous conclusions of the commission are summarized as follows:

1. The primary cause of the world-wide advance of prices since 1897 is the increase of the gold supply, which has reduced the purchasing power of money and brought about a corresponding increase of values measured in

money in all the leading commercial states, and at least in the United States has served as the basis for a vast extension of credit.

2. The advance of prices in the United States has been accelerated greatly by the enormous waste of income, through uneconomic expenditure for war and national armament and through multiple forms of extravagance, both public and private, and of wastage, both individual and social. The increasing burden of disease, accident, crime, and pauperism imposed upon society, and the loss through expenditure on a rising scale for luxuries and through wasteful methods of management in the household, have been potent contributing factors.

3. The advance of prices has been further promoted by a complexity of causes, operating on the side of supply to reduce the volume and increase the expenses of production, and on the side of demand to extend and diversify the consumption of commodities. The main factors in restricting supply and enhancing the cost of commodities are the drain of population from the land, which has decreased the proportion of persons engaged in producing the food supply; the exhaustion of natural resources, which has resulted in increased expenses of production or diminished returns from the soil; and uneconomic methods of production and distribution, especially the latter. The chief influences on the side of demand which have worked parallel to the forces affecting supply are the growing concentration of population in great cities, which has increased the proportion of nonproducing food consumers; the general advance of the standard of living, which has enlarged the requirements on the part of individual consumers of all classes; and the national habit of extravagance.

4. With regard to the tariff, the trusts, and the unions, which have been declared to be either primary or contributory causes of the high cost of living, the commission finds that none of these factors can be regarded as a direct and active cause of the recent increase of prices.

INDEX NUMBERS

Index number compilations afford the only method of arriving at the general course of prices except by means of elaborate calculations involving much time and labor, and requiring a special knowledge of the subject. The *Economist* and Sauerbeck are the leading authorities in England, and D'Averal, Palgrave, and Falkner for French prices. Germany has a number of good compilers: Laspeyres, Paasche, Conrad, Kral, Soetbeer, and Heinze. The United States has been rather deficient in this line. Bradstreet's *Review* has published a number for some time, but it is objected to because not weighted. Nor does the Bureau of Labor attempt to weight its number. Dun's number was the best we ever had, but for some reason the compilation was abruptly discontinued in 1907. Recognizing the importance of a guide which would not mislead us, the writer talked the matter over with Prof. Norton of Yale, and he took up the Dun number where it was dropped and has continued it to date. Prof. Norton's plan was submitted to a number of experts and economists and many of the suggestions offered were adopted. F. C. Croxton, expert of the Senate Committee on Cost of Living, objected to the plan on the ground that simple averages were as good a basis for an index number as a weighted index, and that the Gibson numbers (as those compiled by Prof. Norton are known) differed in no material way from the Bureau of Labor numbers. He did not refer to the fact that the Bureau of Labor number is published too late to be of much use. Referring to his strictures, Prof. Norton replied and said in conclusion: "In the long term average Mr. Croxton is correct in his statement that the Gibson 'index number differs in no material way from the Bureau of Labor numbers.' This is true because one- and two-year averages iron out the variations and differences. But business men are like captains of sailing vessels. It is more important to know something about the probable height of the waves now than the average height for the past ten years. The business man wants his information now. The Gibson numbers differ, therefore, in more promptly reflecting the changes in the cost of living for one thing. The last index number of the Bureau of Labor was Dec., 1908, two years ago. Much dead wood has been eliminated. For example, wood screws and quinine, by falling in price 35 per cent, each completely overcame in the Bureau of Labor numbers the rise of 32 per cent in wheat, 21 per cent in beef, and 15 per cent in mutton for the year 1908. How the price of wood screws is important in the cost of living for an average family is somewhat of a mystery. As for quinine, the druggist will charge all he can get for the pills whether the price rises or falls a hundred per cent."

To facilitate investigation, the Dun numbers from 1890 to 1906 inclusive, and the Gibson numbers from 1907 to date, are set forth in the following table:

Year.	All Foods.	Clothing.	Minerals.	Other.	All Other than Food.	Total All.
1890......	43.4	17.3	15.5	15.4	48.2	91.6
1891......	50.8	16.5	15.1	13.7	45.3	96.1
1892......	45.3	15.6	14.8	14.3	44.7	90.0
1893......	46.0	15.9	14.0	14.7	44.6	90.6
1894......	43.4	13.9	12.0	14.0	39.9	83.3
1895......	42.0	15.3	11.0	13.2	39.5	81.5
1896......	34.0	13.6	13.2	13.5	40.3	74.3
1897......	34.7	13.8	11.6	12.3	37.8	72.5
1898......	38.7	14.7	11.8	12.5	39.1	77.8
1899......	41.6	15.0	15.6	13.0	43.6	85.2
1900......	44.2	16.3	14.8	16.1	47.2	91.4
1901......	44.5	15.1	15.3	16.6	47.0	91.5
1902......	53.5	15.5	16.1	16.8	48.4	101.9
1903......	49.0	17.1	16.5	16.8	50.5	99.5
1904......	48.3	16.5	15.4	16.9	48.9	97.2
1905......	47.3	18.0	16.0	17.1	51.0	98.3
1906......	49.8	19.2	16.6	19.6	55.4	105.2
1907......	50.9	20.8	18.9	19.3	59.0	109.9
1908......	54.2	17.6	15.4	18.3	51.3	105.5
1909......	59.2	17.3	15.2	20.2	52.7	111.9
1910, Oct. 1...	58.2	18.2	15.1	21.3	54.6	112.8

CORPORATIONS

RICHARD C. HARRISON

Incorporation.—The day of the individual and copartnership business is passing rapidly. Unlimited liability and the readjustments necessitated by death or withdrawals are the foes which are driving it from the field to refuge under corporate charters. So certainly is this the tendency that the *Political Science Quarterly* in its March, 1910, issue ventured the prediction that within a short time, "not more than two decades hence, the private and individual direction of industry, of commercial exchange, and of the business of common carriers will practically have ceased." During 1910 the advance toward this condition of affairs has been rapid. In Jan. the total capitalization of corporations formed in the United States with an authorized capital stock of $1,000,000 or over was $187,180,000,[1] as opposed to a capitalization of $80,550,000 for the same class of corporations during Jan., 1909. Companies with a capital stock of from $100,000 to $1,000,000 were formed during Jan., 1910, with a total authorized capital of $51,620,000. The list of large corporations is instructive as showing the tendency of various industrial activities toward consolidation under the corporate form. The following companies, with an authorized capital of $5,000,000 or over, were formed during Jan.:

Mining

Columbia Consolidated Goldfields Co. (Del.)................	$25,000,000
Alpine Mining Co. (Me.)........	5,000,000
Consolidated Pioche Mining Co. (Del.)......................	5,000,000
Cranston Coal Co. (Me.)........	5,000,000

Manufacturing

Atlas Portland Cement Co. (N. J.).	$10,000,000
Hyro Carbons Converter Co. (Del.)	5,000,000
Bon Ami Co. (Del.).............	5,000,000
Baldwin Locomotive Works (increase) (Pa.)................	19,990,000
Codrox Pulp and Lumber Co. (Me.)	5,000,000
General Cotton Securities Co. (Del.)......................	10,000,000
United Tobacco Securities Co. (N. J.)......................	5,000,000

Wholesale and Retail Merchandise

Stern Bros. (N. Y., Dry Goods) ...	$7,500,000
Hegeman & Co. (N. Y., Drugs)....	6,000,000
Childs Co. (Ill.).................	5,000,000
Scruggs-Vandervoort-Barney Co. (Ill., Dry Goods)............	5,250,000
Atlanta Ice and Coal Co. (Ga.)....	7,000,000

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[1] These and other corporation statistics from compilations made by *The Journal of Commerce*.

During Jan. the transactions on the New York Stock Exchange totaled 22,854,845 shares, as against 16,656,000 shares in Jan., 1909.

The enormous volume of Jan. incorporation is surprising in view of the President's message to Congress on Jan. 8, 1910, urging the passage of a Federal corporation law. This added to the Federal corporation tax law of 1909 would naturally have had the effect of postponing large incorporations.

During Feb. there were fewer companies formed with an authorized capital of $1,000,000 or over, but the total of capitalization of those between $100,000 and $1,000,000 increased to $54,584,500. Those with a capital of $5,000,000 or over were as follows:

Mining

Canea River Co. (Del.)	$5,000,000

Manufacturing

United States Motor Co. (N. J.)	$16,000,000
Natural Dry Products Co. (Me.)	10,000,000
Shultz Bread Co. (N. Y.)	6,000,000
Church & Dwight Co. (Me.)	6,000,000

Real Estate Development

Tangier Manor Corp. (N. Y.)	$5,000,000
International Agricultural Corp. (N. Y.)	9,000,000

During March corporations with $1,000,000 or over capitalization totaled $473,716,040. This enormous amount was largely due to the formation of the American Telephone and Telegraph Company in New York with an authorized capitalization of $200,000,000. This corporation was formed to anticipate legislation placing telegraph and telephone companies under the supervision of the public service commission. Other companies with a capitalization of $5,000,000 or over were formed as follows:

Pueblo & Pacific R.R. (Del.)	$25,000,000
Underwood Typewriter Co. (Del.)	14,000,000
Studebaker Vehicle Co. (N. Y.)	8,600,000

Other corporations with a capitalization of between $100,000 and $1,000,000 were formed with a total capital of $65,476,040.

In April corporations with $1,000,000 or over totaled $349,886,500. Those of $5,000,000 or over were as follows:

International El. R.R. Co. (Del.)	$50,000,000
Standard Gas & Electric Co. (Del.)	24,000,000
Consumers Power Co. (Me.)	20,000,000
Third Av. Ry. Co. (N. Y.)	16,590,000
United Southern Appalachian Coal Fields Co.	10,000,000
Central Oil Co.	10,000,000
Sulzberger & Sons (N. Y.)	32,000,000

Companies with a capital of between $100,000 and $1,000,000 were formed with a total capital of $57,976,500.

During May companies with $1,000,000 capital totaled $224,447,800. Companies with $5,000,000 capital or over were formed as follows:

Consolidated Palo Amarillo Rubber Co. (Del.)	$20,000,000
U. S. Radiator Co. (N. Y.)	8,000,000
Porcupine Gold Ridge Mines Co. (Me.)	7,000,000
Stonega Coke & Coal Co. (Del.)	7,000,000
Gardner Gold Mines Co. of N. Y. (Del.)	7,000,000
Arizpe Gold Ridge Mines Co. (Me.)	6,000,000

Companies between $100,000 and $1,000,000 totaled $63,787,000.

In June $1,000,000 and over incorporations totaled $22,319,400. The largest incorporations were the May department stores in New York with $20,000,000, and the Public Service Electric Company in New Jersey with $15,000,000.

The summary for the second half of the year, so far as figures were available at date of going to press, is as follows:

July	$148,367,250
Aug.	194,520,500
Sept.	114,593,500
Oct.	176,437,317

The more important companies formed during the period were:

International Cotton Mills Co. (N. Y.)	$20,000,000
American Bankers Assurance Co. (Del.)	10,000,000
United Light & Railway Co. (Me.)	12,500,000
Wonder Shoe Mfg. Co. (N. J.)	10,000,000
Universal Paper Bottle Co. (Del.)	10,000,000
True Eggs Mfg. Co. (Del.)	10,000,000
National Boat & Engine Co. (Del.)	10,000,000
American Light, Heat and Power	15,000,000

Canada.—According to the Toronto *Monetary Times* 1,465 new corporations were formed in the Dominion of

Canada during the first six months of the year with an aggregate authorized capital of $398,551,500. The Steel Company of Canada, with a capital of $25,000,000, is the largest, with the Canadian Collieries, capitalized at $20,000,000, next.

Great Britain.—English capital applications for the first six months of 1910 reached the enormous total of £188,076,000, or more than the entire year 1909. This was due largely to American borrowings amounting to some £36,000,000, and to rubber flotations amounting to £16,000,000. The comparative figures for 1909 and 1910 are as follows:

	1909.	1910.
1st quarter......	£64,238,400	£88,721,000
2d "	56,835,200	99,355,000
3d "	27,694,400	....
4th "	33,588,800	....

Interstate Difficulties.—The right of a state to exclude foreign corporations absolutely or to admit them on such terms as it sees fit has long been established (Pembina Mining Co. *v.* Pennsylvania 125 U. S. 181; Prewitt *v.* Life Ins. Co. 202 U. S. 252). With this power well recognized and with the revenue possibilities of charter granting clearly in view, most of the states have passed statutes discriminating against outside incorporations either through greater taxation or through the creation of more or less important disabilities. This process has gone on steadily despite the practical destruction of state lines from a commercial standpoint through the development of steam and electricity. The year 1910 has not been so marked by specific clashes between state authorities and interstate corporations as have previous years, although the problem has been growing more complex daily. The reason is to be sought in the fear of the states that Federal action will be taken, and that they will thus be deprived of one of their most fruitful sources of revenue if the conflict becomes too acute.

Federal Regulation and Incorporation.—The idea of Federal incorporation is not new. Alexander Hamilton advocated its adoption by Congress under the constitutional power of that body to regulate interstate commerce. Every secretary of Commerce and Labor has reported in favor of it. Pres. Roosevelt, in his message to Congress on Dec. 5, 1905, said: "Experience has shown conclusively that it is useless to try to get any adequate regulation and supervision of these great corporations by state action. . . . I believe that this regulation and supervision can only be obtained by the enactment of law by the Congress. . . ." Widespread popular dissatisfaction with the practical workings of the Sherman anti-trust act, and with the consequent turmoil into which business has been thrown by prosecutions under it, has been growing rapidly since the beginning of President Roosevelt's administration.

In a special message to Congress on Jan. 8, 1910, advocating the passage of a Federal incorporation law, Pres. Taft, said: "It is the duty and purpose of the Executive to direct an investigation by the department of justice, through the grand jury or otherwise, into the history, organization, and purposes of all the industrial companies with respect to which there is any reasonable ground for suspicion that they have been organized for a purpose, and are conducting business on a plan which is in violation of the anti-trust law. . . ." The panacea offered was Federal incorporation. "The main purpose, as frankly set forth in the President's message," said the Springfield *Republican* in commenting upon it, "is to enable those corporations which are now conducting business in violation of the anti-trust law to reorganize under a Federal charter, and continue to do business under provisions that insure publicity, prevent stock watering, and guard against conspiracies in restraint of trade."

The bill incorporating the President's suggestions was introduced into Congress on Feb. 7, 1910 (H. R. 20,142). It remained in the judiciary committee until the end of the session. In form and substance it is modeled closely upon the corporation statutes of New York, New Jersey, and Massachusetts. It provides for the formation of corporations by any five or more persons to engage in trade between the several states and with foreign countries. The capitalization may not be less than $100,000, and the articles of association must state definitely the proportion of capital to be contributed in property. The powers possible to secure under the act are those usual to trading companies, except that the Federal corporation is to have no power to purchase, acquire, or hold stock in other corporations, nor may it engage in any form of banking. To prevent stock watering it is provided that the corporation proposing to issue stock for property must first file with the Commissioner of Corporations a statement describing the property, the terms of existing agreements for its transfer, and an appraisal by two disinterested appraisers showing its true value. Elaborate reports to the Commissioner of Corporations are provided for. A Federal corporation may be dissolved by act of Congress, or a receiver may be appointed at the instigation of the attorney general. Broad powers of supervision are given to the Commissioner of Corporations with the idea that publicity will do much to cure the evils of corporate business.

The year 1910 has seen a rather remarkable acceptance of the publicity-cure theory not only by the general public, but by the corporations themselves. "One by one the great silent corporations are seeking public confidence by adopting a new policy of publicity" (H. K. Smith, Commissioner of Corporations). We find such men as George W. Perkins, late of J. P. Morgan & Co., advocating publicity and Federal control (*Independent,* April 21, 1910), and a great public service corporation like the Hudson & Manhattan Railway Company, of New York, adopting the motto "The Public be Pleased." Whether or no this attitude be mere hypocrisy, it is at least novel, and 1910 has seen a wonderful expansion of it.

XV. SOCIAL ECONOMY AND SOCIAL QUESTIONS[1]

IMMIGRATION AND EMIGRATION

Statistics.—Preliminary reports published by the Bureau of Immigration for the year ending June 30, 1910, show the following figures: Total immigration to the United States 1,041,570, an excess over 1909 of 289,784. Total for the decade 1900–10, 8,795,386. The four years in which the total has exceeded the million mark are 1905, 1906, 1907, 1910. The grand total of immigration 1820–1910 has been 27,894,293.

The racial groups contributing the largest numbers in the total for 1910 are:

Italians	223,453
Poles	128,348
Jews	84,250
Germans	71,380
English	53,498
Irish	38,382
Magyars	27,302

A new element of immigration not hitherto of consequence has been an influx of more than 5,000 Hindoos into California during the last year.

The Immigration bureau groups the nationalities or races into five grand divisions for the decade ending 1910, as follows:

Slavic group	3,178,490
Ibiric group	2,138,527
Teutonic group	1,831,332
Keltic group	977,407
Mongolian group	166,528
All other peoples	503,102
Total for the decade	8,795,386

Complete figures for the year ending June 30, 1910, are:

Arrivals:	
Total	1,198,037
Immigrant aliens	1,041,570
Non-immigrant aliens	156,467
Departures:	
Total	380,418
Emigrant aliens	202,436
Non-emigrant aliens	177,982

The net increase in population due to immigration was therefore 543,843.

Excess of immigrant over emigrant aliens, 525,984.

Number of immigrants debarred, 10,411, or 1.09 per cent of those applying for admission. The three chief classes debarred were:

Those likely to become public charges, including paupers and beggars	4,458
Those afflicted with contagious disease	2,382
Contract laborers	1,172
All others, including criminals, prostitutes, insane, feeble-minded, etc	2,399

Among the above were 413 Chinese debarred on account of the exclusion acts. The figures for the last year show that the effects of the financial panic of 1907–08 upon immigration have greatly diminished.

The total immigration for 1907 was	1,285,349
The number dropped in 1908 to	782,870
Decreased again slightly in 1909 to	751,876
For the calendar year Jan. 1, to Dec. 30, 1908, the immigrants numbered	557,625
While the emigrants numbered	598,783
Or a total loss by emigration of	41,198

Immigrants exceeded emigrants in Sept., 1908, and from that time the tide has steadily increased.

Distribution of Immigrants.—In the decade preceding 1909, immigrants settling in the United States were distributed approximately as follows:

N. Atlantic Division	5,150,000 or 69 %
S. Atlantic Division	155,000 or 2 %
N. Central Division	1,167,000 or 22 %
S. Central Division	90,000 or 1.5%
Western Division	420,000 or 5.5%

The states receiving more than 250,000 immigrants during the decade were:

New York	2,492,613
Pennsylvania	1,449,780
Massachusetts	576,024
Illinois	565,340
New Jersey	391,164
Ohio	326,601

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[1] Except as otherwise indicated, this Department is contributed by J. P. Lichtenberger, of the University of Pennsylvania.

In the states receiving the bulk of the immigration the concentration is in the great cities. Exceptions to this tendency are relatively few. Even where the immigrants are not enumerated in the great cities they are congested in mining and manufacturing centers, as in the coal regions of Pennsylvania, Ohio, Illinois, West Virginia, etc., or in new milling districts adjacent to cities. An example of this latter type of community is Lackawanna City, near Buffalo, N. Y. Here is a steel town scarcely a decade old with a population of approximately 20,000, of which more than eighty per cent is of foreign birth. Hungary Hollow, Ill., is another such community built by the steel industry within seven years, and containing a population of 15,000, Hungarians almost exclusively.

Money Brought by Aliens.—The average amount of money brought into the United States by aliens for the past decade has been $22 per capita. For the year ending June 31, 1909, 79,122 persons brought $50 or over; 482,859 persons brought less than $50 with which to begin life in America. The total amount of cash brought into the country during the year was $17,331,828. With the exception of small groups of Spanish-Americans who averaged $104, and East Indians, averaging $61, the English averaged highest, with $55 apiece. French with $54; Welsh, $49; Scotch, $49; Spanish, $48; Dutch and Flemish, $42; Japanese, $41, were next in order. Groups below the average are Bulgarians and Servians, $18; Croatians, Slavonians, Magyars, $15; South Italians, Slovaks, $14; Hebrews and Ruthenians, $13; Lithuanians, $11; Koreans, $7. The amount carried out of the country by returning emigrants, together with the amounts sent to relatives, cannot be determined, but it very greatly exceeds the amount brought in. It should be remembered, however, that the wealth they have created and for which they have received their wages remains in the country.

Of the total immigration in 1909, 523,718 persons claimed to have paid their own passage, while 220,352 admitted that their passage had been paid by relatives, and 7,716 by other than relatives. On this basis it appears that about one third of our immigrants were assisted to reach America.

Sex and Age.—Of the total immigrants for 1909, 519,969 were males and 231,817 were females. The Japanese group is the only one in which the females exceeded the males. In the Irish group, the sexes were approximately equal. The English, French, and Hebrews show a proportion of females to males far above the average. Age groupings are large in the period of 14 to 44 years. In 1909, 83,393 were below 14; 624,876 between 14 and 44, and 38,517 above 45 years of age.

Naturalization.—Declarations of intention and petitions for naturalization to the number of 143,212 were filed in 217 Federal and 2,177 state courts; 42,178 petitions for naturalization were filed in the same courts, 37,337 of which were granted and certificates of naturalization issued. The states in which more than 1,000 were issued are:

New York	6,346
Pennsylvania	4,043
Illinois	2,692
Massachusetts	2,453
Minnesota	2,315
Wisconsin	2,038
Michigan	1,737
N. Dakota	1,734
New Jersey	1,501
W. Virginia	1,418
California	1,310

Illiteracy.—The number of immigrants over fourteen years of age who could not read or write increased from 26 per cent in 1908 to 29.2 per cent in 1909. In 1907 it was 29.9 per cent. There has been a steady increase in illiteracy in recent years, owing to the increase in immigration from southeastern Europe. In 1899, illiteracy was only 19.7 per cent.

Federal Legislation. — During the last session of Congress, bills for extensive amendments to our immigration laws of 1907 were introduced into the Senate and House of Representatives. A special effort has been made to raise the sum collected for every alien coming into the United States from $4 to $10, with a view to diminish the volume of undesirable immigration. So far this bill has not become a law.

On March 26, 1910, the immigration

act of 1907 was amended so that the exclusion section now reads as follows:

Sec. 2. That the following classes of aliens shall be excluded from admission into the United States: All idiots, imbeciles, feeble-minded persons, epileptics, insane persons, and persons who have been insane within five years previous; persons who have had two or more attacks of insanity at any time previously; paupers; persons likely to become a public charge; professional beggars; persons afflicted with tuberculosis or with a loathsome or dangerous contagious disease; persons not comprehended within any of the foregoing excluded classes who are found to be and are certified by the examining surgeon as being mentally or physically defective, such mental or physical defect being of a nature which may affect the ability of such alien to earn a living; persons who have been convicted of or admit having committed a felony or other crime or misdemeanor involving moral turpitude; polygamists, or persons who admit their belief in the practice of polygamy; anarchists, or persons who believe in or advocate the overthrow by force or violence of the Government of the United States, or of all government, or of all forms of law, or the assassination of public officials; prostitutes, or women or girls coming into the United States for the purpose of prostitution or for any other immoral purpose; persons who are supported by or receive in whole or in part the proceeds of prostitution; persons who procure or attempt to bring in prostitutes or women or girls for the purpose of prostitution or for any other immoral purpose; persons hereinafter called contract laborers who have been induced or solicited to migrate to this country by offers or promises of employment or in consequence of agreements, oral, written or printed, expressed or implied, to perform labor in this country of any kind, skilled or unskilled; those who have been, within one year from the date of application for admission to the United States, deported as having been induced or solicited to migrate as above described; any person whose ticket or passage is paid for with the money of another, or who is assisted by others to come, unless it is affirmatively and satisfactorily shown that such person does not belong to one of the foregoing excluded classes and that said ticket or passage was not paid for by any corporation, association, society, municipality, or foreign government, either directly or indirectly; all children under sixteen years of age unaccompanied by one or both of their parents, at the discretion of the Secretary of Commerce and Labor or under such regulations as he may from time to time prescribe: Provided, That nothing in this Act shall exclude, if otherwise admissible, persons convicted of an offense purely political, not involving moral turpitude; Provided further, That the provisions of this section relating to the payments for tickets or passage by any corporation, association, society, municipality, or foreign government shall not apply to the tickets or passage of aliens in immediate and continuous transit through the United States to foreign contiguous territory: And provided further, That skilled labor may be imported if labor of like kind unemployed cannot be found in this country: And provided further, That the provisions of this law applicable to contract labor shall not be held to exclude professional actors, artists, lecturers, singers, ministers of any religious denomination, professors for colleges or seminaries, persons belonging to any recognized learned profession, or persons employed strictly as personal or domestic servants.

Section three of the act of 1907 was also amended and now reads as follows:

Sec. 3. That the importation into the United States of any alien for the purpose of prostitution or for any other immoral purpose is hereby forbidden; and whoever shall, directly or indirectly, import, or attempt to import, into the United States, any alien for the purpose of prostitution or for any other immoral purpose, or whoever shall hold or attempt to hold any alien for any such purpose in pursuance of such illegal importation, or whoever shall keep, maintain, control, support, employ, or harbor in any house or other place, for the purpose of prostitution or for any other immoral purpose, in pursuance of such illegal importation, any alien, shall in every such case be deemed guilty of a felony, and on conviction thereof be imprisoned not more than ten years and pay a fine of not more than five thousand dollars. Jurisdiction for the trial and punishment of the felonies hereinbefore set forth shall be in any district to or into which said alien is brought in pursuance of said importation by the person or persons accused, or in any district in which a violation of any of the foregoing provisions of this section occur. Any alien who shall be found an inmate of or connected with the management of a house of prostitution or practicing prostitution after such alien shall have entered the United

States, or who shall receive, share in, or derive benefit from any part of the earnings of any prostitute; or who is employed by, in, or in connection with any house of prostitution or music or dance hall or other place of amusement or resort habitually frequented by prostitutes, or where prostitutes gather, or who in any way assists, protects, or promises to protect from arrest any prostitute, shall be deemed to be unlawfully within the United States and shall be deported in the manner provided by sections twenty and twenty-one of this act. That any alien who shall, after he has been debarred or deported in pursuance of the provisions of this section, attempt thereafter to return to or to enter the United States shall be deemed guilty of a misdemeanor, and shall be imprisoned for not more than two years. Any alien who shall be convicted under any of the provisions of this section shall, at the expiration of his sentence, be taken into custody and returned to the country whence he came, or of which he is a subject or a citizen in the manner provided in sections twenty and twenty-one of this act. In all prosecutions under this section the testimony of a husband or wife shall be admissible and competent evidence against a wife or husband.

Report of the Immigration Commission. — The Immigration act of 1907 provided for a commission of nine persons (three senators, three representatives, and three others) to investigate the whole subject of immigration. This commission expired by limitation on Dec. 5th, and submitted a final report, which is accompanied by forty printed volumes of testimony and findings.

In its final report the commission reached the unanimous conclusion that the time had arrived when steps should be taken for the radical restriction of immigration. The report says:

> The present immigration movement is in large measure due to economic causes; but emigration from Europe is not now an absolute economic necessity, and as a rule those who immigrate to the United States are impelled by a desire for better conditions rather than by the necessity of escaping from intolerable ones. This fact should largely modify the natural incentive to treat the immigration movement from the standpoint of sentiment and permit its consideration primarily as an economic problem.

The commission presents several proposals by which restriction of immigration might be affected, including a reading and writing test, the exclusion of unmarried unskilled laborers, limitations upon the number arriving at any one port and from particular races, as well as in the amounts of money in their possession on arrival. All the members of the commission do not concur in the feasibility of the reading and writing test.

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THE NEGRO

What Tuskegee Institute is Doing. —During his recent visit to England, Mr. Booker T. Washington made a significant address before the British Antislavery and Aborigines Protection Society, Sir Thomas Fowell Buxton, president, in the chair. In the course of his remarks, Mr. Washington referred to the future of the negro in the United States, and the part the Tuskegee Institute is playing in working out the problem. He said that in legal form negroes throughout the world had freedom, but they must all realize that freedom, in its deepest and widest meaning, could never be a bequest; it must be a conquest. In America his race both enjoyed advantages and suffered from disadvantages. Among the former it might be said that the negro was the only race that went there by reason of the fact that it had a pressing invitation to do so. Some people suggested that they should go back, but in so far as he could discern their intentions they were planning to remain in the United States, and he believed that in that country there was wisdom, patience, forbearance, Christianity, and patriotism enough to enable each race to live side by side, working out its destiny with justice to the other. They possessed the advantage, too, that, as races were counted in this age, the negro in America was a new race, and they stood in the position of being ready and anxious to bend themselves in any direction that offered the best course for their uplifting. The Tuskegee Institute was started in a little shanty with one teacher and thirty students. To-day it has between 1,600 and 1,700 men and women students, who come from thirty-six states in the Union and twenty-two foreign countries, and 176 instructors and helpers. It stands on 3,000 acres, and with four exceptions its ninety-six buildings were almost wholly constructed by the labor of the students. The property is valued at about $1,000,000, and there is not one dollar of mortgage upon it. The annual expense of carrying on the work of the Institute is $256,000. While the Institute thoroughly believed in university and professional education for a large number of the negro race, it also believed that in their present stage of civilization it was important to emphasize hand training. When the negro was freed he felt that labor with the hand was past, and students came to him in disgust when they found they had to put up their own buildings. His answer to them was that the object of the Institute was not to work the negro, but to teach the negro how to work. The greatest single achievement at Tuskegee was to be found in the change that had come over the millions of his race in regard to the subject of labor, for there was no hope for any race until it had learned that all forms of labor were dignified and all forms of idleness a disgrace. From the Tuskegee Institute alone 6,000 men and women had been sent out who would be found at work in all parts of the southern states, and in demand by whites as well as blacks for the supervision of farms, industrial establishments, and schools. Tuskegee was criticised for paying too much attention to the material things of life. They believed thoroughly in the ethical and more important side of life, but it was difficult to make a good Christian of a hungry man. His race was responding magnificently to the efforts which had been made on their behalf, and tremendous progress had been made.

THE PURE FOOD AND DRUGS ACT

PAUL PIERCE

For twenty-five years an effort to enact food legislation had failed in Congress. Pres. Roosevelt took cognizance of the deplorable condition of the foods Americans were forced to eat, and in his message to the fifty-ninth Congress, placed himself on record as being unqualifiedly in favor of food reforms and strongly recommended the passage of a law prohibiting food adulteration.

Congress acted upon his recommendation, and passed the law known as the pure food and drugs act of June 30, 1906. The law is very thorough in its provisions, and is in the main accomplishing the purpose for which it was enacted. The patent-medicine fakir is hit the hardest of all. The law provides that the quantity of any opium, cocain, morphin, chloroform, eucan, hasheesh, alcohol, or any of several other poisons, must be plainly stated on the outside of the package.

Adulteration. — Drugs, in general, are held to be adulterations if they differ from the recognized standard laid down in the United States *Pharmacopœia*, or *National Formulary*, or if they differ from the professed standard under which they are sold. The law also covers the adulteration of confectionery by the addition of mineral substances, liquors, or narcotics.

Foods are held to be adulterated if any substance has been mixed with them to lower their quality; if any substances have been substituted for them; if any valuable constituent of the article has been removed; if they be mixed, colored, powdered, coated, or stained, whereby damage or inferiority is concealed; if they contain any added poisonous or other deleterious ingredients, which *may* render the foods injurious to health; if the food consists of filthy, decomposed, or putrid animal or vegetable substance, or of any portion of an animal unfit for food.

The use of preservatives by external application only is permitted when the directions for the removal of such preservatives are printed on the package. Violations of the law are made misdemeanors, and each offense is punishable by fine or imprisonment, or both.

Misbranding.—Food or drugs are held to be misbranded when the packages bear any statement that is false or misleading. Any article, however, which does not contain any added poisonous or deleterious ingredients is not adulterated or misbranded when known under its distinctive name; or if, when compounds, imitations of blends, they are plainly indicated. The term "blend" is defined to mean a mixture of like substances, and does not exclude harmless coloring or flavoring ingredients. Proprietors or manufacturers of proprietary foods which contain no added unwholesome ingredients are not required to disclose their trade formulas, except to secure freedom from adulteration or misbranding.

Enforcement. — The law provides that the secretaries of the treasury, agriculture, commerce, and labor shall make uniform rules and regulations for carrying out its provisions, and that all examinations of specimens of foods and drugs shall be made in the bureau of chemistry, or under its direction, for the purpose of determining whether such articles are adulterated or misbranded. If it appears that any of such specimens are adulterated or misbranded, the secretary of agriculture shall cause notice to be given to the party from whom such sample was obtained, and any such party shall be given an opportunity to be heard under such rules and regulations as are prescribed. If it appears that any of the provisions of the act have been violated, the secretary of agriculture shall certify the facts to the proper United States district attorney with a copy of the results of the analysis, and the district attorney shall commence proceedings in the proper courts, etc.[1]

To effect the enforcement of the act, the secretary of agriculture has appointed a board, known as the board of food and drug inspection. This board is charged with the administration of the food and drugs act, and reports to the secretary of agriculture. Its personnel is Dr. H. W. Wiley, chief of the bureau of chemistry; F. L. Dunlap, associate chemist; and G. P. McCabe, solicitor of the department.

The bureau of chemistry is charged with the examination of foods and the preparation of the data on which the execution of the food and drugs act is based. In this bureau of chemistry are included not only H. W. Wiley and F. L. Dunlap, but also the chief of the division of foods, the chief of the Washington food-inspection laboratory, the chief food-and-drug inspector, the chief of the dairy division, the chief of the dairy laboratory, and the chiefs of the laboratories of Boston, Chicago, Cincinnati, New York, Philadelphia, St. Paul, San Francisco, Seattle, and other cities.

For the purpose of better enforcing the law, state officials have been commissioned by the secretary of agriculture in states having food laws, and authorized to take samples of foods and drugs according to the regulations of the United States Department of Agriculture; to procure the analysis of such samples from chemists (who are commissioned to work in the several states in collaboration with the bureau of chemistry), and to transmit the cases to the secretary of agriculture with such other information as may be necessary to provide a basis for prosecution.

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[1] This hearing before the Secretary of Agriculture is to determine whether there is any fault or error in the findings of the analyst or examiner. If the examination or analysis is found correct, the Secretary shall give notice to the United States Attorney, etc. (See Regulation 5, Rules and Regulations.)

The board of food and drug inspection has considered a number of questions that have arisen in connection with the enforcement of this law, and has made several important decisions which are known as "food-inspection decisions," and which relate to guarantees, labels, fictitious firm names, physicians' prescriptions, samples, original packages, private importations, geographical names, shellac and other gums, and various foods, drugs, and beverages.

These decisions of the board, adopted by the department, do not add anything to the rules and regulations for the enforcement of the food law adopted by the three secretaries, or take anything from them. They are merely interpretations of the law. Each manufacturer is entitled to his own interpretation, and to assume the responsibility of acting in accordance with it.

Over 600 notices of judgment have been published. A large number of money fines have been imposed, and carloads of illegal property destroyed. Something like 200,000 imported shipments have been inspected, and probably over 30,000 samples taken therefrom have been examined and analyzed by the port laboratories. Over 1,000 shipments have been refused admission and reëxported, and several thousand shipments have been allowed to enter this country only after relabeling.

The milk supply of several cities has been inspected, and many cases brought against offenders for the interstate shipment of adulterated milk. A large number of cases of adulteration and misbranding of flavoring extracts, vinegar, molasses, buckwheat flour, headache cures, spices, maple sugar, olive oil, and various proprietary medicines have been reported.

Decisions have been rendered, sustaining the constitutionality of the law and upholding the officials who are enforcing it. Judgments have been rendered against bleached flour and other food adulterations. Hundreds of hearings have been held, first before the commission appointed by the three secretaries to represent them in making the regulations for carrying the law into effect; after that in various hearings before the chief of the bureau of chemistry, then the hearings before the secretary of agriculture, and also hearings before numerous other officials.

The law has greatly improved the quality of our food and drug supply. The sale of patent medicines containing habit-forming drugs has been greatly curtailed. Food frauds have been checked and short weights largely abolished, and the people are learning the value of the true label.[1]

The coöperation of the department with the food commissioners of the states has been a great help in bringing about the enforcement of the law.

In spite of all that has been accomplished and the fundamental excellence of the law itself, many of the original sponsors of the law feel that some of the rules and regulations, decisions, definitions, etc., fail to carry out its provisions, and have practically nullified some of its most important features, and that these regulations are therefore illegal.

The Referee Board.—The law clearly provides that the bureau of chemistry is to determine whether or not foods are adulterated or misbranded. Notwithstanding this, an outside commission was appointed to pass upon the problems arising under the law, which commission is known as the referee board. This board is considering matters which many feel can only be legally considered, and finally determined by the bureau of chemistry. The most important of these relate to the legality (harmfulness or harmlessness) of certain preservatives in foods. The referee board has already reached conclusions contrary to those reached by Dr. Wiley, after his long and expensive investigations in the bureau of chemistry; and he has been overruled by regulations based upon the findings of the referee board.

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[1] The report of the solicitor for the Department of Agriculture for the fiscal year, ending June 30, 1910, is in preparation, and from it when published the reader can get details of what has been accomplished down to June 30, 1910. Some of the figures given above are based upon a speech made by the secretary of agriculture in 1909.

The Use of Preservatives. — Of course a large part of the work of carrying out the law has come under the bureau of chemistry, and the board of food and drug inspection, and Dr. Wiley, as chief of the one and head of the other, has made every endeavor to protect the rights of the people under the law. He took the position very early that the law prohibited harmful preservatives in foods, and has made a hard fight for his opinion as to the harmfulness of benzoate of soda and other chemical preservatives; and has been sustained by many leading pathologists and chemists of this and other countries, as well as by the American Medical Association, several state medical societies, and a great many of the state food officials of the United States.

In cases where a few scientists claimed that certain preservatives were harmless, Dr. Wiley has always favored giving the people the benefit of the doubt. From a reading of the law, it appears quite plain that the intent of Congress was to prohibit the use of preservatives. The law specifically prohibits any poisonous or deleterious ingredient which may (not which *does*) render the food injurious to health, the only exception being the use of preservatives by external application, which is permitted when the directions for the *removal* of such preservatives are printed on the package. This seems to clearly imply that their internal use is never permitted. Dr. Wiley interprets the law as it reads.

It is also noteworthy that a number of the leading manufacturers of the country offer no objection to the prohibition of the use of preservatives in foods; and a number of them have recently organized an association to oppose the use of chemicals in foods, claiming that they are harmful and not necessary under sanitary conditions, for the successful preparation of good, sound food for commercial purposes.

Benzoate of Soda.—Of the questions referred to the referee board, the first to engage their attention was whether or not a food to which had been added benzoic acid, or any of its salts, contained added poisonous or other deleterious ingredients which might render the food injurious to health; and also whether or not this preservative would reduce, lower, or injuriously affect the quality or strength of such food.

The conclusions reached by the referee board were that the admixture of sodium benzoate with food in small or large doses had not been found to injuriously affect or impair the quality or nutritive value of such food, and that in small doses mixed with the food it was not injurious to health, and in large doses mixed with the food it had not been found to exert any deleterious effect on the general health, nor to act as a poison in the general acceptation of the term. In some directions there were slight modifications in certain physiological processes, the exact significance of which was not known.

Dr. Wiley, of the bureau of chemistry and the board of food and drug inspection, had previously found the preservative to be harmful.

Based on this report of the referee board, however, the secretary of agriculture and his associate secretaries made a ruling entirely removing the restriction upon the use of benzoate of soda in foods, and by this ruling this drug may now be used in any quantity, in meat, fish, milk, butter, cheese, vegetables, and condiments; in fact, in the entire list of prepared food supplies.

Many food reformers feel that this sweeping ruling is unwarranted even by the conclusions reached by the referee board; that it practically nullifies that section of the national food law which aims to secure freedom from adulteration and fraudulent cheapening; and that it is contrary to the provision of the law that examination of food and drugs, to determine whether or not they are adulterated and misbranded, shall be made in the bureau of chemistry.

The national food law prohibits all forms of adulteration in foods, and is emphatic in its prohibition of all harmful chemicals, or other substances, or any treatments of foods which might conceal damage or inferiority. Then the questions arise: May this chemical be harmful? Does it conceal damage or inferiority? If so, not the secretary of agriculture, nor the board of food and drug inspection, nor the referee board, nor any other power, has the right to permit its use in the minutest quantities or for the smallest space of time while the law remains on the statute books.

The rules and regulations adopted for carrying out the provisions of the law as to adulteration and misbranding cannot nullify these provisions. The question as to the use of this and other preservatives should be, and undoubtedly will be, ultimately determined by the courts.

Laxity of Enforcement. — Many food reformers make the mistake of attacking the national food law, when they mean to attack the departmental interpretation of the law, erroneously believing that the interpretation put upon the law by officials is the law itself. It is also important to note that in many cases brought under the food and drugs act the law has been greatly hampered by the laxity of the courts. In one case in which it was found that milk was adulterated, in that it consisted in whole or in part of a filthy, decomposed, and putrid animal substance, a fine was imposed of $10. Again, an infant soothing syrup, said to contain no morphine, and guaranteed to be perfectly harmless, was found to contain morphine, the label containing false and misleading statements intended to mislead and deceive the purchasing public. In this case the firm was fined $10.

Where tomato ketchup was found to consist wholly or in part of a filthy, decomposed, and putrid vegetable substance, and to contain a large number of bacteria and molds, which rendered it unfit for food, the fine was $50. In another case of adulterated milk the fine was only $5. A coffee firm found guilty of coating coffee with lead chromate and other poisonous and deleterious substances, which rendered the coffee injurious to health, was fined $10. In short-weight cases the fines have run as low as $1.

Many cases are on record of the adulteration and misbranding of drugs, headache powders, drug-habit-forming medicines, maple syrups, flavoring extracts, and condiments, for which the penalty was too small to deter the adulterator from continuing his fraud in comparative peace. It should not be overlooked that the law also provides for prison sentence.

A conscience that would poison a baby's candy, paint it with varnish to make it look like chocolate, pollute the infant's milk with formaldehyde, dope it with chloroform and other opiates, and embalm other products with aniline dyes, salicylic acid, sulphate of copper, and all manner of chemicals, is not going to be troubled over a nominal fine. The national food law, however, is not to blame. It affords adequate punishment if properly enforced.

There exists, however, a provision that permits of great harm, which is one shortcoming of the national food law. The law permits the sale of imitation and other juggled foods if their manufacturers label them "imitations," "compounds," or "blends." The jobber or retailer thus buys them as "imitations" or counterfeit foods, but, unless they are contained in "original packages," they are invariably sold to the consumer as real, genuine foods. Thus bakery products are in large part made of spoiled eggs, shipped in carload lots and deodorized with formaldehyde. Pie fillings are sold in wholesale lots to restaurants and bakeries, which are indescribably nauseous. Tarts, jams, and ice creams are made of fictitious foods. In fact, an entire meal was recently prepared in a chemical laboratory without a particle of real food in it—a repast that had all the appearance of wholesome dishes, but was entirely substanceless. Such is the magic power of chemicals!

The hotel or restaurant proprietor,

the bakery owner or the grocer, may distinguish the fictitious foods he buys by the words "imitations," etc., printed on the label, as required by the law, and also by the low price he pays for them. But the consumer never has a chance to see these labels, and under existing conditions it is difficult for him to tell whether he is eating real or imitation foods. Likewise many things we buy in bulk in grocery stores may be nothing but synthetic, substanceless foods, or worse.

Thus it is plain that, without the aid of honest and efficient state and city food laws and food officers, the national food law can be greatly crippled. This fact the food adulterator seems to have discovered, and in some directions it now looks as if he had really transformed the national law into a tool to aid him in exploiting, robbing, and poisoning the public. If the city and state food officers would do their duty, such conditions would not exist. If they would be as strict as the national authorities, they would see that the "state" foods are as pure as those that enter into interstate commerce, and that the consumer be permitted to know when he buys "imitation" foods as well as the grocer or baker. Hence, with state and municipal enforcement even as efficient as the national enforcement, America's dream of pure foods would be nearly realized.

State Food Laws.—The provisions of the national pure food act have in the main been incorporated into state laws, in the following states: California, Connecticut, Hawaii, Illinois, Indiana, Kansas, Kentucky, Maine, Massachusetts, Michigan, Mississippi, Nebraska, New Jersey, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Porto Rico, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, Wisconsin, Wyoming.

In most of these states it is specifically provided that ordinary articles of food, wholesome in themselves, and not misrepresented as to their nature or composition, may be sold.

The manufacture and sale of adulterated foods is prohibited without detailed definition of the term "adulterated," by Colorado, Georgia, Iowa, Louisiana, Maryland, Minnesota, and Rhode Island.

Fraudulent manufacture of adulterated foods and the sale with knowledge of their impurity is prohibited by Alabama, Arizona, Connecticut, Idaho, Indiana, Kansas, Kentucky, Maine, Michigan, Mississippi, Montana, Nebraska, New Hampshire, New York, North Carolina, North Dakota, Oklahoma, Oregon, Porto Rico, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming.

The sale of foods which are condemned by the board of health is forbidden in Hawaii.

The sale of food that is not of the nature and quality claimed for it, or demanded by the purchaser, is prohibited in the District of Columbia and New Mexico.

The manufacture and sale of foods adulterated with substances injurious to health is forbidden in Alaska, District of Columbia, Florida, Hawaii, Illinois, Kansas, Kentucky, Maine, Oklahoma, Oregon, and Vermont.

Adulterated foods must not be sold as pure in South Dakota.

Administration of Food Laws.—The earliest laws passed for the regulation of the manufacture and sale of food did not provide for officers to enforce them. In such cases the provisions of the laws could only be invoked by a suit for damages or by proceedings instituted in the same manner as for misdemeanors generally. Whenever any serious attempt is made to guard the food supply, it is found necessary to have an official whose special duty it is to enforce the food laws. The officer or body appointed for this purpose in the United States and in the several states is as follows:

Treasury department and department of agriculture—Federal food laws.

Board of health—Alabama, California, District of Columbia, Indiana, Kansas, Louisiana, Maryland, Massachusetts, New Hampshire, New Jersey, Oklahoma, Porto Rico, South Carolina, Tennessee, Texas, Vermont.

State department (or board) of agriculture—Delaware, Florida, New

Hampshire (oleo law), New York, North Carolina, Virginia, Alabama (butter law).

Food commissioner—Hawaii, Illinois, Nebraska.

Dairy commissioner — Connecticut, Iowa.

State dairy (food and oil) commissioner—Colorado, Idaho, Massachusetts, Michigan, Minnesota, Missouri, Ohio, Oregon, Pennsylvania, South Dakota, Utah, Washington, Wisconsin, Wyoming.

State experiment station — Kentucky, North Dakota, Maine.

No provision is made for the enforcement of the food laws in Georgia, Mississippi, Montana, Philippine Islands, and Rhode Island, except in so far as the authority of the inspectors in certain counties or cities extends. No officer is authorized to enforce the food laws in Alaska, Arkansas, Arizona, Nevada, New Mexico, and West Virginia.

THE LIQUOR TRAFFIC

Production.—The production of distilled spirits from materials other than fruits and deposited in distillery warehouses in the United States reached its highest point in the fiscal year ending June 30, 1907—168,573,913 gallons. For the fiscal year ending June 30, 1908, the production was 126,989,740, and for 1909 133,450,755. The year 1909 shows a gain of 6,461,015 gallons over 1908, and a decrease of 35,123,158 from the amount produced in 1907. The amount of distilled spirits in warehouses June 30, 1908, was 245,438,816 gallons; on June 30, 1909, 235,026,128 gallons.

Fermented liquors produced for the fiscal year ending June 30, 1907, was 58,546,111 barrels; in 1908, 58,747,680 barrels or a decrease of 201,569 barrels; in 1909, 56,303,497 barrels, a further decrease from 1908 of 2,444,183 barrels.

The states producing the greatest amounts of fermented liquors in 1909 are: New York, 12,572,042 barrels; Pennsylvania, 7,050,262 barrels; Illinois, 5,525,473 barrels; Wisconsin, 4,569,941 barrels; Ohio, 4,058,438 barrels, and Missouri, 3,704,978 barrels.

The materials used for the production of distilled spirits in the year 1909 in bushels were: malt, 3,221,399; wheat, 9,648; barley, 1,678; rye, 4,364,370; corn, 18,080,711; all others, 10,837; total, 25,688,370. In addition a total of 33,550,024 gallons of molasses was used.

Consumption.—Withdrawn from distilleries and warehouses for consumption, year ending June 30:

Amount.	1908	1909	1910
Spirits distilled from fruits.............gal.	1,670,031	1,850,700	2,204,196
Spirits distilled from grains.............gal.	119,808,402	114,799,465	126,453,580
Fermented liquors...................bar.	58,747,680	56,303,497	59,485,117

The figures for 1908 in the United States may be compared with the latest available figures from other countries, as follows:

	Malt Liquors (gal.)	Wines (gal.)	Fermented Liquors (gal.)
United States........................	1,821,867,627	57,738,848	140,084,436
Great Britain........................	1,500,709,000	16,646,933	58,318,373
Germany...........................	1,782,778,000	113,583,000	124,313,300
France............................	289,103,000	1,342,830,600	97,177,968
Italy..............................	6,725,000	1,045,961,000	11,150,400

Revenue.—For the revenue derived by the United States Government from the liquor taxes see II, *Statistical Tables—Internal Revenue Receipts.*

Number of Liquor Dealers.—The official roll of liquor dealers[1] by states with the population to each liquor dealer in 1909:

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[1] Includes wholesale and retail dealers, distillers, and brewers. Also all druggists and persons who for any purpose are required to pay internal revenue tax.

STATE.	Number.	Pop. to each Liquor Dealer.
Alabama	1,860	1,196
Arizona	1,000	200
Arkansas	1,218	1,437
California	17,785	121
Colorado	3,689	217
Connecticut	4,107	256
Delaware	392	536
District of Columbia	1,015	240
Florida	1,008	713
Georgia	2,740	977
Idaho	1,294	270
Illinois	23,626	228
Indiana	9,003	327
Iowa	5,565	413
Kansas	2,476	727
Kentucky	4,105	572
Louisiana	4,964	340
Maine	1,218	599
Maryland	4,648	256
Massachusetts	5,790	574
Michigan	10,092	285
Minnesota	8,583	233
Mississippi	678	3,245
Missouri	9,452	378
Montana	2,828	145
Nebraska	3,348	448
Nevada	1,783	56
New Hampshire	1,036	434
New Jersey	11,605	224
New Mexico	1,246	360
New York	37,106	234
North Carolina	1,620	1,390
North Dakota	1,895	316
Ohio	13,838	325
Oklahoma	1,749	852
Oregon	2,636	275
Pennsylvania	21,638	350
Rhode Island	1,950	268
South Carolina	816	1,961
South Dakota	1,712	336
Tennessee	2,267	970
Texas	6,491	616
Utah	1,108	307
Vermont	335	1,090
Virginia	2,191	958
Washington	4,601	272
West Virginia	1,783	701
Wisconsin	13,511	180
Wyoming	873	149
Total	262,268	330

Prohibition.—The Prohibition Party maintains an organization in all states except Mississippi, Nevada, and South Carolina, with complete party machinery.

State prohibition was operative in the following states on Jan. 1, 1910:

Alabama, state prohibition by constitutional amendment, adopted Nov., 1909.

Georgia, statutory prohibition in effect Jan. 1, 1908.

Kansas, state prohibition by legislative enactment since 1890.

Maine, state prohibition by constitutional enactment since 1854.

Mississippi, statutory prohibition since Dec. 31, 1908.

North Carolina, statutory prohibition in effect Jan. 1, 1909.

North Dakota, constitutional prohibition.

Oklahoma, constitutional prohibition.

Tennessee, statutory prohibition in effect July 1, 1909. Liquor manufacture prohibition act effective Jan. 1, 1910.

Prohibition in the above states is not the result of political party prohibition, the Prohibition party vote not reaching three per cent of the total vote in any state, but of the action of the combined anti-saloon forces in the states on the special issue, irrespective of party politics; nor is it the result of the action of any one of the regular parties in championing the cause of prohibition.

Local Option. — The Anti-Saloon League is organized in all states and carries on an active nonpartisan propaganda for local option and for the closing of saloons in all local option territory.

The voting units in the local option states vary greatly, as may be seen from the following:

Counties: Delaware, Idaho, Maryland, Michigan, Montana, and South Carolina.

Counties and municipalities: California, Florida, Iowa, Louisiana, Virginia, and West Virginia.

Rural counties and municipalities: Arizona, Kentucky, Missouri, and Washington.

Counties and townships: Indiana.

Townships: Connecticut, Rhode Island, and Vermont.

Municipalities: Arkansas.

Municipalities and townships: Massachusetts, New Hampshire, Minnesota, and Nebraska.

Municipalities and precincts: South Dakota.

Municipalities, wards, and precincts: Colorado.

Townships, municipalities, and precincts: Illinois.

Rural townships: New York.

Counties, municipalities, townships, and city resident districts: Ohio.
Counties, municipalities, and precincts: Oregon.
Counties and precincts: Texas.
Townships, municipalities, and residence districts: Wisconsin.

The following states were under local option on Jan. 1, 1910:

STATE.	"Dry" Counties.	"Wet" Counties.	"Dry" Area, Square Miles.	"Wet" Area, Square Miles.
Arizona	0	13	20,313	92,703
Arkansas	63	12	53,000	850
California	11	46	51,568	106,792
Colorado	11	48	95,710	8,215
Connecticut	0	8	3,600	1,390
Delaware	2	1	1,650	400
Florida	35	12	52,000	6,680
Idaho	15	8	65,000	19,800
Illinois	40	62	45,000	11,650
Indiana	70	22	32,970	3,380
Iowa	60	39	37,350	18,675
Kentucky	98	21	39,000	1,400
Louisiana	33	26	35,679	13,041
Maryland	10	13	6,560	5,650
Massachusetts	0	14	4,824	3,491
Michigan	30	53	35,190	23,725
Minnesota	2	83	54,000	29,365
Missouri	59	56	46,912	22,503
Montana	1	26	36,549	119,531
Nebraska	23	67	46,500	31,010
New Hampshire	0	10	8,315	990
New York	1	60	28,000	21,170
Ohio	62	26	36,954	4,106
Oregon	21	13	70,619	25,411
Rhode Island	0	5	246	1,004
South Carolina	36	6	26,100	4,470
South Dakota	14	37	60,000	17,650
Texas	161	84	200,000	65,780
Vermont	4	10	9,465	100
Virginia	80	20	38,000	4,450
Washington	10	28	24,340	44,840
West Virginia	37	18	20,573	4,207
Wisconsin	0	71	29,000	27,040

License Fees.—Saloon license fees in the states are as follows:

New Hampshire: $1,200.
New York: $150–$1,200.
Florida, Massachusetts, West Virginia: $1,000.
Minnesota and Nebraska: $500–$1,000.
Ohio and Washington: $300–$1,000.
Arkansas: $800.
Michigan and Missouri: $500–$800.
Idaho and Texas: $750.
Iowa: $600 upward.
South Dakota: $400–$600.
California and Illinois: $500 upward.
Maryland and Virginia: $450.
Colorado: $150–$450.
Arizona: $300.
Connecticut: $200–$300.
Montana: $150–$300.
Louisiana: $200 upward.
Wisconsin: $100–$200.
Kentucky: $150.

License States.—The following states and territories have neither state prohibition nor local option, but are under the license system:

Alaska, all licenses granted by the courts. No dry territory.
District of Columbia, licenses granted by commissioners.
Hawaii, Congress prohibits saloons except under territorial license. No dry territory.
Nevada, licenses granted promiscuously, dry territory 11,490 sq. mi.
New Jersey, dry area 30 sq. mi.
New Mexico and Wyoming, no licenses can be granted outside of incorporated towns. This gives New Mexico a dry area of 119,600 sq. mi. out of a total of 122,580; and Wyoming, 96,000 sq. mi. out of a total of 97,890.
Pennsylvania, licenses granted by court of quarter sessions. 1,000 sq. mi. of dry territory.
Utah, saloons are closed by local decree of councils and county boards. 60,000 sq. mi. dry territory.
Total dry area in the United States, 2,112,304 sq. mi.
Total wet area, 1,509,909 sq. mi. Number of persons living in the dry area, 41,557,516. Number in the wet area, 46,382,592.

Dispensary System.—South Carolina adopted the state dispensary system in 1893. No liquor could be drunk on the premises of the dispensaries; it must be sold only in sealed packages of not less than one half pint, which could not be opened on the premises. Doors must be closed between sunset and sunrise. No sales could be made to minors nor to persons in the habit of becoming intoxicated. Each purchaser signed a blank giving his name and age, kind and quantity of liquor bought. All liquors received by the commissioner were required to be tested by the chemist of the state university, otherwise, their use and consumption were declared to be against the morals of good health and safety of the state.

The state did not succeed as a bar keeper, and the county dispensary system displaced the state system in 1907. The attempt to keep the system out of politics was a failure. As a revenue measure its success was greater. In 1892, 613 barrooms in the state paid county and municipal taxes to the amount of $215,372. In 1908 one hundred dispensaries in twenty-four counties paid a revenue of $898,728.64.

The state legislature in 1909 adopted state-wide prohibition with the privilege of a referendum vote in wet counties. Twenty-two dispensary counties of the state voted upon the question, Aug. 17; sixteen voted dry and six voted to continue the dispensary system. Twenty counties were already dry under the county local option law so that at the present time thirty-six counties are without saloons or dispensaries, and six have the dispensary system.

Liquor Legislation in 1909–10:

Providing license fees for selling liquors on trains or common carriers: Arizona, $300; Minnesota, $50 for each car.

Making it unlawful to drink intoxicating liquors on trains or common carriers: Florida, Kansas, Nebraska, South Dakota, Tennessee, Kentucky, and Mississippi.

To prevent wholesale liquor dealers from being interested in or owning retail places: Idaho and Washington.

Limiting the number of saloons to the population: Iowa, 1,000; Minnesota, 500; New York, 750 except in the case of hotels continuously occupied since 1896.

Requiring liquor dealers' licenses in clubs: Montana.

Requiring liquor shipped into no license territory to be marked with kind and quantity of liquor contained; preventing advertising of liquor in the state: North Dakota.

To prevent shipping liquor into prohibition or no license territory: Oregon.

To prevent treating or giving away liquor: South Dakota.

To prevent townships from granting licenses within two and a half miles of prohibition towns: South Dakota.

Forbidding the manufacture of liquors in the state: Tennessee. [Passed over the governor's veto.]

To prevent soliciting orders for liquor in dry territory: Tennessee and Texas.

To prevent selling or giving liquors to minors: Texas.

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MARRIAGE AND DIVORCE

License Requirements.—License to marry is required in all states except New Jersey (required only in case both parties are not residents of the state) and South Carolina.

All states except South Carolina require marriages to be recorded; but Vermont, New York, New Jersey, Delaware, Maryland, Georgia, Florida, Ohio, Indiana, Wisconsin, Iowa, South Dakota, Kentucky, Tennessee, Mississippi, Arkansas, Texas, Utah, Washington, Oregon, and California attach no penalty for nonrecord.

Prohibited Marriages. — Marriages between whites and negroes are prohibited or criminal in Alabama, Arkansas, California, Colorado, Delaware, Florida, Georgia, Idaho, Indiana, Kentucky, Louisiana, Maryland, Mississippi, Missouri, Nebraska, Nevada, North Carolina, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Utah, Virginia, and West Virginia.

The interpretation of the statutes of southern states, relating to marriages between blacks and whites, was the question before the Supreme Court of North Carolina in a suit to annul a marriage under the statute providing that a marriage between a white person and a person of negro descent to the third generation inclusive shall be void. The court in its decision in the case, Ferrall *vs.* Ferrall (69 S. E., 60), holds that to render a marriage void the negro ancestor of the third generation must be of pure negro blood, and not one who has his status as a negro fixed and ascertained by the recognition and general consensus of the neighborhood where he lives.

The *Harvard Law Review*, in commenting on this decision, refers to a recent decision by the Supreme Court of Louisiana, where, in State *vs.* Treadway (52 So., 500, La.), the court ruled that an octoroon or person having one eighth negro blood is not a person of the negro race within the terms of the statute making concubinage "between a person of the Caucasian or white race and a person of the negro or black race" a felony. The *Law Review* says that most of the statutory definitions of the word "negro" are broad enough to include an octoroon, as in the statutes of Florida and Alabama, but whenever the question has been considered by the courts independently of statutory definitions they have been in accord with the principal case (Felix *vs.* State, 18 Ala., 720; Monroe *vs.* Collins, 17 Oh. St., 665). Statutes of other states where there is no arbitrary definition of the word "negro" invariably add "or mulatto," "or person of negro descent to the third generation inclusive." In Virginia "negro" and "colored person" are used interchangeably and defined by statute as "a person with one fourth or more negro blood."

Marriages between whites and Indians are unlawful in Arizona, Nevada, North Carolina, Oregon and South Carolina; between whites and mongolians in Arizona, California, Mississippi, Nevada, Oregon, and Utah.

Marriage with feeble-minded, insane, idiotic, or epileptic persons is unlawful, voidable, or criminal in Connecticut, Delaware, District of Columbia, Georgia, Illinois, Indiana, Kansas, Kentucky, Maine, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, Ohio, Oklahoma, Rhode Island, South Carolina, Utah, Virginia, Wisconsin, and Wyoming. Kansas and Minnesota make exception where the wife is over forty-five years of age.

Remarriage after divorce is in no way conditioned in Arizona, Arkansas, Connecticut, Florida, Iowa, Kentucky, Missouri, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, Ohio, Texas, Utah, West Virginia, and Wyoming. It is unlawful until after two months, in Alabama; three months, in North Dakota; six months, in Idaho, Kansas, Minnesota, Nebraska, Oklahoma, Oregon, Rhode Island, and Washington; one year, in California, Colorado, Illinois (two years for adulterers), and Wisconsin; two years, in Indiana, Maine, Massachusetts (for defendant), Michigan (or less if fixed by court), Montana (three years for defendant). In Delaware, the party guilty of adultery cannot marry the person with whom the crime was committed. In adultery cases, in the District of Columbia the guilty party cannot remarry except with the original spouse. In Georgia, the privilege of remarriage is determined by the jury trying the case. In Louisiana, the wife may remarry only after the lapse of three months; when the cause is adultery the guilty party may not remarry at all. In Missouri and Mississippi, the court may decree marriage unlawful during the life of husband or wife. In New York, the adulterer may remarry after five years, with the permission of the court. In Pennsylvania, South Dakota, and Tennessee, the adulterer or adulteress may not marry during the life of the offended party. In Vermont, the libellant may not remarry until after three years. In Virginia, the court may prohibit entirely remarriage by persons guilty of adultery.

All decrees are interlocutory in California (one year), Kansas (six months), and New York (three months).

Statistics of Marriage.—The special census report on marriage and divorce, 1887–1906, enumerates 12,832,044 marriages; the number in 1887 was 483,069; in 1906, 853,290.

The annual average marriage rate per 10,000 of the total population of the United States was 91 in 1890 and 93 in 1900. The marriage rate by states runs all the way from 58 in Delaware in 1890 to 151 in Nevada in 1900.

Marriages per 10,000 population in other countries range from 102 in Western Australia to 51 in Ireland. The next highest rate to that of Western Australia is Saxony, with a rate of 88. Other countries with a rate between 88 and 80 are: Hungary, 85, Belgium, Prussia, and Ontario 83, Russia 82, Austria and Manitoba 80.

The marriage rate of 93 per 10,000 population in the United States is therefore 18 higher than the average in other countries and only exceeded by that of Western Australia.

Causes for Divorce:

No divorces are granted for any cause in South Carolina.

Adultery: all other states.

Cruelty, extreme cruelty, and inhuman treatment: all other states except Georgia, Maryland, Michigan, Nebraska, New Jersey, New York, North Carolina, Tennessee, Virginia, and West Virginia. In Alabama and Kentucky the privilege extends only to the wife.

Crime or felony: all other states except Alabama, District of Columbia, Florida, Georgia, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Texas, Vermont, Washington, and Wisconsin.

Bigamy: in Arkansas, Colorado, District of Columbia, Florida, Illinois, Kansas, Mississippi, New Jersey, Ohio, Oklahoma, Pennsylvania, and Tennessee.

Desertion or abandonment, without specified time: in New Mexico. After three personal monthly notices: in Louisiana and New Mexico. After one year: in Arkansas, California, Colorado, Florida, Idaho, Kansas, Kentucky, Maine, Montana, Nevada, North Dakota, Oklahoma, Oregon, Rhode Island, South Dakota, Utah, Washington, and Wisconsin. After two years: in Alabama, Arizona, District of Columbia, Illinois, Indiana, Iowa, Michigan, Mississippi, Nebraska, New Jersey, Pennsylvania, and Tennessee. After three years: in Connecticut, Delaware, Georgia, Maine, Maryland, Massachusetts, New Hampshire, Ohio, Texas, Vermont, Virginia, and West Virginia.

Habitual drunkenness, without specified time: in Alabama, Arizona, Connecticut, Delaware, Florida, Indiana, Iowa, Kansas, Louisiana, Maine, Massachusetts, Michigan, Mississippi, Montana, Nebraska, Nevada, New Mexico, Oklahoma, Rhode Island, Tennessee, Utah, Washington, and Wyoming. After one year: in Arkansas, California, Colorado, Idaho, Kentucky, Minnesota, North Dakota, Oregon, South Dakota, and Wisconsin. After two years: in Illinois. After three years: in District of Columbia, New Hampshire, and Ohio. The time limit is abrogated in Wisconsin in case of the wife's drunkenness.

Impotency: in all states except California, Connecticut, Idaho, Iowa, Louisiana, Montana, New York, North and South Dakota, Texas, and Vermont.

Neglect to provide, time unspecified: in Maine, Massachusetts, Nebraska, New Mexico, Rhode Island, Utah, Vermont, Washington, and Wisconsin. After one year: in Colorado, Nebraska, and Wyoming. After two years: in Arizona and Indiana. After three years: in Delaware and New Hampshire.

Willful neglect, time unspecified: in Kansas, Montana, Ohio, and Oklahoma. After one year: in California, Idaho, North and South Dakota.

Imprisonment, time unspecified: in Kansas, Minnesota, Mississippi, New Mexico, Ohio, Oklahoma, Tennessee, Virginia, Washington, West Virginia, and Wyoming. For one year: in New Hampshire and Texas. For two years: in Alabama, Georgia, and Pennsylvania. For three years: in Michigan, Nebraska, Vermont, and Wisconsin. For five years: in Massachusetts. For life: in Connecticut.

Fraudulent contract: in Connecticut, Delaware, Georgia, Kentucky, New Jersey, Ohio, Oklahoma, Pennsylvania, and Washington.

Pre-nuptial pregnancy: in Alabama, Arizona, Georgia, Iowa, Kansas, Kentucky, Mississippi, New Mexico, North Carolina, Oklahoma, Tennessee, Virginia, West Virginia, and Wyoming. Exception is made in Iowa in case the husband has illegitimate children.

Pre-nuptial prostitution unknown at the time of marriage: in Maryland, Virginia, and West Virginia.

Insanity or lunacy: in the District of Columbia, Georgia, Idaho, Mississippi, Pennsylvania, and Utah.

Marriage within prohibited degrees of relationship: in Florida, Georgia, Mississippi, and Pennsylvania.

Indignity to person: in Arkansas, Oregon, and Pennsylvania.

Attempted life of the other party: in Illinois, Louisiana, and Tennessee.

Use of opium and other drugs: in Maine, Massachusetts, Mississippi, and Rhode Island.

Absence without word for seven years: in Connecticut and Vermont.

When from absence or other circumstance the other party may be presumed to be dead: in Rhode Island.

Fugitive from justice two years: in Virginia.

When an alien or citizen of another state has deserted his wife for three years and become a citizen of a foreign country: in New Hampshire.

When a wife has resided in another state for ten years without husband's consent: in New Hampshire.

Living apart without intercourse five years: in Kentucky.
A citizen for two years whose husband or wife has obtained a divorce in another state: in Florida.
A resident of the state whose husband or wife has obtained a divorce in another state: in Michigan.
A divorce obtained outside the state which does not release the party residing in the state: in Ohio.
Crime against nature: in Alabama.
Violent and ungovernable temper: in Florida.
Public defamation: in Louisiana.
Treatment to injure health or reason: in New Hampshire.
Concealment of loathsome disease: in Kentucky.
Gross misbehavior and wickedness: in Rhode Island.
Personal indignities rendering life burdensome: in Washington and Wyoming.
If husband before marriage was a licentious person: in West Virginia.
Three years' refusal to cohabit: in New Hampshire.
When the husband is a vagrant: in Wyoming.
Condemnation to infamous punishment: in Louisiana.
Refusal of wife to move with husband to the state, willfully absenting herself for two years: in Tennessee.
Uniting with a religious society which requires the renunciation of the marriage relation: in Kentucky and New Hampshire.
Any cause which renders the marriage null and void: in Maryland.
Any cause deemed sufficient by the court: in Washington.

Limited divorce is granted only in Alabama, Arkansas, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Indiana, Kentucky, Louisiana, Maryland, Michigan, Maine (to wife only), Nebraska, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, Tennessee (to wife only), Vermont, Virginia, West Virginia, and Wisconsin.

Residence Requirements:

All states except the following require one year's residence of plaintiff in the state before filing the petition.
Idaho, Nebraska, Nevada, South Dakota, and Texas require but six months. Nebraska abrogates the time limit in case the parties were married in the state and have continued so to reside until the time of filing the petition.
Florida, Indiana, Maryland, Michigan, New Jersey, North Carolina, Rhode Island, and Tennessee require two years' residence.
Connecticut, District of Columbia, Massachusetts (if parties were married in the state), three years.
Massachusetts: five years.
Delaware: the petitioner must be a resident of the county in which the petition is filed but no time limit is specified.
Louisiana: no law on the subject.
New York: both parties must have been residents when the offense was committed, or have been married within the state, or plaintiff must have been a resident at the time of the offense and also at the time of the filing of the petition.
Mississippi with its one year requirement has a law which declares that the court shall not take jurisdiction in any case where the proof shows that a residence or domicile was acquired in the state with the purpose of securing a divorce. (See V. *Law and Jurisprudence.*)

Statistics of Divorce.—During the period 1867–1906, for which government reports have been made, there were granted 1,274,341 divorces in the United States.

The average number of divorces per 100,000 married population in the United States was 200 in 1900, as compared with 148 in 1890. The rate varied greatly in the different states. In Washington it was 513 in 1900, as compared with 316 in 1890; in Montana 497 in 1900, 430 in 1890; in Iowa 246 in 1900, 183 in 1890; in Kentucky 237 in 1900 and 172 in 1890; Mississippi, 225 in 1900 and 151 in 1890; in Rhode Island, 281 in 1900 and 203 in 1890; in Vermont 177 in 1900, 116 in 1890; in Massachusetts 124 in 1900 and 85 in 1890; in Pennsylvania 94 in 1900 and 75 in 1890; in New York 60 in 1900 and 45 in 1890.

The rates of divorce to married population vary widely in the various geographical divisions, as follows:

Rate per 100,000 Married Population

	1900.	1890.
United States	200	148
North Atlantic Division	100	81
South Atlantic Division	98	65
North Central Division	225	193
South Central Division	279	188
Western Division	356	305

Causes for Which Divorces Were Granted and to Which Party—1887–1906

Cause.	Total Number.	Granted to Husband.		Granted to Wife.	
		Number.	Per Cent.	Number.	Per Cent.
All causes	945,625	316,149	33.4	629,476	66.6
Adultery	153,759	90,890	59.1	62,869	40.9
Cruelty	206,225	33,178	16.1	173,047	83.9
Desertion	367,502	156,283	42.5	211,219	57.5
Drunkenness	36,516	3,436	9.4	33,080	90.6
Neglect to provide	34,670	6	*	34,664	100.0
Combination of preceding causes	88,849	14,330	16.1	74,519	83.9
All other causes	58,104	18,026	31.0	40,078	69.0

* Less than one-tenth of one per cent.

Increase of Divorces, Compared with Increase of Population, by Five-year Periods—1870–1905

Year.	Divorces.			Population.			Population to one Divorce.	Divorces per 100,000 Population.
	Annual Average.	Increase. Number.	Increase. Per Cent.	Total.	Increase. Number.	Increase. Per Cent.		
1905	67,791	12,289	22.1	82,574,195	6,579,620	8.7	1,218	82
1900	55,502	14,890	36.7	75,994,575	6,523,431	9.4	1,369	73
1895	40,612	7,415	22.3	69,471,144	6,523,430	10.4	1,711	58
1890	33,197	8,573	34.8	62,947,714	6,395,966	11.3	1,896	53
1885	24,624	5,481	28.6	56,551,748	6,395,965	12.8	2,297	44
1880	19,143	4,774	33.2	50,155,783	5,798,706	13.1	2,620	38
1875	14,369	3,162	28.2	44,357,077	5,798,706	15.0	3,087	32
1870	11,207	....	......	38,558,371	....	......	3,441	29

Increase of Divorces, Compared with Marriages, by Five-year Periods—1870–1905

Year.	Marriages, Annual Average.	Divorces, Annual Average.	Marriages to one Divorce.	Divorces per 1,000 Marriages.
1905	806,339	67,791	11.9	85.3
1900	684,981	55,502	12.3	81.0
1895	595,982	40,612	14.6	68.1
1890	543,761	33,197	16.3	61.0
1885	....	....	....	....
1880	456,456	19,143	23.8	42.0
1875	....	....	....	....
1870	377,888	11,207	33.7	29.6

Comparative Rates.—With a divorce rate of eighty-two per 100,000 population in 1905 the United States leads the civilized world with the exception of Japan. Comparing the rate of seventy-three per 100,000 population in the United States in 1900, which is the date of the latest available foreign statistics, with the countries having a rate of ten or over per 100,000 population, we have:

Japan	215
United States	73
Switzerland	32
Saxony	29
France	23
Roumania	20
Denmark	17
Prussia	15
Servia	13
New Zealand	12
Belgium, Bulgaria, Hungary	11
Australia, and the Netherlands	10

Federal Divorce Laws.—The conference of state commissioners on uniform legislation which considered this subject concluded, after careful investigation, that no Federal divorce law is feasible, and that all efforts to secure the passage of a constitutional amendment—a necessary prerequisite—would be futile.

Great Britain.—A royal commission is taking exhaustive testimony in England, with a view to recommending a complete revision of the law relating to divorce.

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THEATERS AND AMUSEMENTS

Moving Pictures.—The moving-picture theater constitutes the principal American amusement to-day. It is estimated that there are at least 10,000 such places of amusement in the United States.

Principal cities with the number of places and seating capacity are as follows:

City.	No. Estimated.	Seating Capacity.
New York	450	150,000
Chicago	310	93,000
Philadelphia	160	57,000
St. Louis	142	50,410
Cleveland	75	22,500
Baltimore	83	24,900
San Francisco	68	32,400
Cincinnati	75	22,500
New Orleans	28	5,600

Daily audiences in the United States number about 2,250,000, and the income of the theaters aggregated $57,500,000. Attendance at the moving-picture shows is fully three times that of the regular theaters.

Manufacturing concerns produce over 20,000 feet of moving-picture film per week. Most of this is inexpensive, but occasional films cost from $1,000 to $5,000, and a few amounts in excess of these figures.

Exchanges purchasing the films for rental to individual show men pay an aggregate of more than $9,000,000 for the product, and the rental brings more than double that amount.

Regulation. — Efforts have been made in some of the chief cities to control the character of the exhibits.

In Chicago the censorship of moving-picture films is in the hands of the police. A special board is appointed and, under the supervision of the chief of police, inspects all films before they are permitted to be used by exhibitors. All pictures of crimes and any indecent exhibitions are rigidly excluded. Exhibitors who present uncensored films are arrested and fined. The plan is effective.

In New York the national board of censorship, instituted by the People's Institute and composed of representatives of various civic bodies, although a voluntary organization, has secured the coöperation of most of the larger manufacturers, and for the year ending in the spring of 1910 passed upon 2,900 reels of film. Of these, 900 were classed as having distinct educational value. Fourteen per cent of the total number were classed as pedagogical, consisting of historic scenes and scientific experiments, while more than half of the remaining eighty-six per cent were put down as serious drama.

The effect of these methods of censorship has been to raise the tone of production since the greatest cities prevent the presentation of improper pictures and many smaller cities throughout the country refuse to allow pictures to be shown which cannot be shown in Chicago and New York. An example of the interest taken in the matter is the special action taken by many cities preventing the exhibition of the El Reno prize-fight pictures. Critics and investigators of moving-picture shows commonly state that the moral tone of these exhibitions is equal, if not superior, to that of the regular theaters.

THE NEW YORK MOTOR-VEHICLE LAW

Charles Thaddeus Terry

Probably the most logical and scientific motor-vehicle law which has yet been devised and put upon the statute books of any state is the new motor-vehicle law passed by the New York legislature and signed by Gov. Hughes. The bill has two or three features which could justifiably be pronounced unnecessarily harsh and drastic in the burdens which they impose upon motor-vehicle users; but taken as a whole, the measure is a distinct advance over previous legislation in this field.

The enactment was the result of far-reaching experience in connection with and study of motor-vehicle legislation. One of the principal virtues of the law consists in the fact that it is a long step toward uniformity of legislation throughout the United States. The local conditions in various parts of the country do not differ in any such material respect as to justify the diverse motor-vehicle legislation which has appeared from time to time during the few years prior to 1908. Since the beginning of 1908 motor-vehicle users and legislators throughout the country have been making a determined effort to secure the utmost uniformity in motor-vehicle regulation, and the accomplishment has been such that a comparison of the motor-vehicle statutes of the various states will disclose the fact that in some very substantial respects uniformity has been secured. The motor-vehicle statute of New York was the ripened product of all the previous efforts in this regard.

The essential principles of a thoroughly scientific and adequate motor-vehicle statute are all, with perhaps two or three exceptions, embodied in the so-called "Callan bill." The primary purposes of a motor-vehicle statute may properly be said to be two in number, that is to say, to afford the greatest possible protection to all the users of the highways, motor-vehicle users, of course, included, and to preserve, as far as may be, the integrity of the highways themselves. An examination of the New York statute discloses provisions excellently well calculated to subserve both of these purposes, if the statute be properly enforced. It is to be observed that no statute ever yet enforced itself, and that the effectiveness of any statute depends entirely upon the enforcement of it. This truth, fundamental as it is, has been too much ignored, and people have been prone to rush to the legislature for new legislation to remedy apparent ills, when all that was required was the proper enforcement of already existing statutes.

In respect to regulation of speed, signaling devices, lights, brakes, and identification marks, it is hard to see how the New York statute could be improved upon. Every provision has been so constructed as to require a maximum of caution with a minimum of unnecessary or arbitrary restriction.

Speed Provisions.—The statute observes the truth that you cannot measure negligence, or its converse, care, in miles-per-hour of speed. It might be gross negligence to go eight miles an hour at one place and under some circumstances, whereas it might not be at all negligent to go thirty miles an hour at another place and under other circumstances. Therefore, the provision of the law in this respect is that crime shall be predicated only of speed in excess of what caution should dictate under the circumstances. It is error to say of the New York statute that it fixes any miles-per-hour limitations whatever upon the speed of a motor vehicle. It does not. It provides, in general, simply that no greater rate of speed shall be maintained than such as is "careful and prudent" under the circumstances; but that, outside of cities and incorporated villages, the maintenance of a greater rate of speed than thirty miles an hour for a quarter of a mile or over shall be *prima facie* evidence of reckless driving, which presumption may, obviously, be rebutted by showing that, under the particular circumstances of the time and place, the maintenance of that rate of speed was not actually negligent; and except that cities and incorporated villages may enact local ordinances so long as they do not limit the speed to less than fifteen miles an hour, and even where the speed is limited by such local ordinances to fifteen miles an hour, such a speed shall be deemed only *prima facie* evidence of reckless driving, and then only if such rate of speed be maintained for at least an eighth of a mile. These provisions enable the courts to punish the real offenders—namely, those who in fact disregard the requirements of due caution. The question in every case will be the simple question of negligence under the circumstances, and not whether the driver was going at a rate below or above a certain number of miles per hour. This is logical and scientific, as no strict miles-per-hour provision ever could be.

Identification. — Whether regarded as a deterrent against an inclination to recklessness or as a ready clew to the detection of offenders and a means to bring about their speedy punishment, the provisions respecting identification marks to be carried by a motor vehicle are perhaps the most important of all the provisions in a motor-vehicle statute. If the means of identification are such that there is practically no possibility whatever of the driver of a motor vehicle evading pursuit and capture in case of an offense, then the one distinguishing feature between motor vehicles and other vehicles using the highways—to wit, the capacity of the former for great speed—is at once overcome, and all vehicles put upon an even basis. It could well be contended that, in respect of registration and identification, there should be no separate law governing motor vehicles whatever, but that the general highway law should govern all vehicles alike. The motor-vehicle statute of New York provides most ample and satisfactory means of identification, whether during the daytime or at night. The registration numbers are to be carried not only upon the rear of the vehicle, but also upon the front of the same, dark numerals, upon a light background, or *vice versa*, and of such size as to be easily legible at a considerable distance, and the number must be so illuminated by a lamp at night that anyone within a reasonable distance of the vehicle can easily discern its number and so trace the owner; furthermore, the abuse, which exists elsewhere, under some other laws, consisting in the use by the owners of motor vehicles of "dead" numbers, which did not properly belong to the machine, or of numbers which belonged to a machine long since out of commission, or of numbers which had been assigned to a machine belonging to another person, or entirely fictitious numbers, is practically eliminated by the provisions of the law now under consideration. They require that every machine shall be registered anew each year, and that the number plates and numerals shall be so changed as to color and shade of color as to be easily distinguishable from the number plates used in any previous year. The peace officer may thus tell at a glance whether there is anything peculiar about the identification mark upon a machine and make proper investigation. The most wholesome influence in the direction of caution will be the conviction on the part of the motor-vehicle driver that his machine, being so clearly identified, the chances of escape from the results of recklessness are negligible.

Prohibition of Local Ordinances.—No motor-vehicle law can be effective unless its provisions be so clear and plain that the average motor-vehicle driver may learn them and remember them. They are intended to be made his rules of conduct. It is obvious that, if the rules of conduct are too many, and particularly if they are subject to constant change, he will not be able to learn them or remember them at all, and even though he attempt to do so, he will become discouraged in the effort and fall into a disrespect of the whole law on the subject. This would naturally be the effect, and indeed has, as a matter of experience, been the effect of a general law leaving to local authorities, as cities, towns, villages, and counties, the right to promulgate and enforce rules regulating motor-vehicle driving for their particular localities. Nothing could be more absurd, because nothing could be more ineffective and useless. The set of rules which is proper and adequate for one section of the state is equally effective for every other section of the state. A set of rules which is adequate for one city, town, or village is equally adequate for all the other cities, towns, and villages. The enactment of a law which should give the power of enacting local ordinances might result in two hundred or three hundred different motor-vehicle laws, applicable to different parts of the state, and thus the motor-vehicle driver would be in a position where he could not possibly obey the law, but must inevitably become a criminal, because it would not be humanly conceivable that he should learn the different provisions of that many laws, and continue to unlearn them, and learn new ones, according as the boards of aldermen, boards of selectmen, village trustees, county supervisors, and the like may change them from time to time. Therefore, the provisions of the law of New York State, prohibiting the enactment of local ordinances, and requiring that motor vehicles shall be regulated by the general law for the whole State, sets an example well worth emulation. The New York statute is defective to the extent that it permits an exception to this prohibition against local ordinances in the case of cities of the first class, which are permitted to pass regulations respecting traffic and speed, and in respect of all cities and incorporated villages which are permitted to pass regulations respecting speed within certain prescribed limitations. The limitations are proper ones, and happily they have been but very little observed by the cities and villages; and hence such local ordinances as they have passed are ineffective, although motor-vehicle drivers have submitted to arrest, and the imposition of fines under such local ordinances, notwithstanding such prosecutions, were in direct violation in many cases of the motorists' rights, and a clear usurpation of authority on the part of village, city, or town governments. Such governments have no power under the act to pass ordinances limiting the speed other than as generally limited in the act, unless they erect sign posts at such points as may properly warn the motor-vehicle driver of the particular regulation in force in the particular district; and notwithstanding in many sections such sign posts have not been erected, local ordinances have been enforced because the motorists either were not aware of their rights or adopted a course of nonresistance, such submission being not at all to their credit.

Punishments Fit the Crimes.—The one distinguishing feature of the motor vehicle over other vehicles—to wit, its capacity for speed—is fully recognized and provided for in the provisions for the infliction of punishment for offenses against the proprieties of the highway. The offense of using the speed of the car to make an escape, after knowingly committing injury to person or property, is made a felony and visited with the extreme punishment of a fine up to $500 or imprisonment up to two years, or both such fine and imprisonment, and for a second offense with imprisonment up to five years.

A violation of the general speed provisions of the act constitutes a misdemeanor, punishable by a fine up to $100.

Punishment for minor offenses under the act is made adequate and commensurate with the offenses.

It is to be borne in mind that the provisions of the act with respect to punishment and penalties are not exclusive, but run concurrently with the provisions of the criminal law, under which the authorities may punish if they prefer. There should be no room in a motor-vehicle statute for provisions imposing penalties for violations other than violations peculiar to this particular class of vehicle. All other offenses should be and are well taken care of by the general provisions of the criminal law.

Lights, Brakes, and Signaling Devices.—If more satisfactory provisions respecting the lights which the motor vehicle shall display, the brakes with which the car shall be equipped, and the signaling devices which shall be employed in connection therewith, could be devised, they certainly have not yet been devised, and they would be hard to conceive. There must be "adequate brakes in good working order and sufficient to control such vehicle at all times when the same is in use, and a suitable and adequate bell, horn, or other device for signaling"; and, when it is dark, two lighted lamps in the front of the vehicle, throwing their rays for at least two hundred feet, and two on the rear, one of which rear lights shall be red and one of which rear lights shall so illuminate the identification number as to make it visible for at least fifty feet.

The amazing and lamentable situation is that, whereas such precise regulations are laid upon the *motor vehicle*, in respect of lights, for example, other vehicles are allowed to remain a menace and hazard in these respects. Every argument which could be adduced for the requirement that motor vehicles shall carry adequate lights at night would apply with as much, if not more, point to horse-drawn vehicles. If the motor vehicle is required to carry lights, so that all other users of the highway may avoid it, then much more should the more slowly moving horse-drawn vehicle carry lights, so that the motor vehicle may avoid it, as it is better able to do, because it moves the more quickly and is more speedily turned out of the way. Some day logic and common sense in this respect will prevail, and the general highway law will require all vehicles to carry lights at night.

Efficiency of Operators.—So far as is possible by provisions of law, the act makes it certain that the drivers of motor vehicles, whether chauffeurs or owners, shall be capable of managing the machines which they operate, and shall be of such character as to be safely trusted upon the highway. Not only has it been put, by the act, within the power of the secretary of state to require chauffeurs to pass a rigid examination as to skill, knowledge, and the other factors which enter into capacity in this respect, before he shall issue a license, but the secretary of state is given a very wide discretion in passing upon applications for licenses in the clause (Section 289), which provides that "no license shall be issued until the secretary of state or his authorized agent *is satisfied* that the applicant is a *proper person* to receive it." This clause, it would seem, empowers the secretary of state to make a very broad and sweeping inquiry on all matters, whether covered expressly in the act or not, which might enter into the determination of the propriety of issuing a license in any given case, and similarly it enables the secretary of state, upon an application for a reregistration in any year, to take into consideration the conduct of the applicant under his license of the preceding year. If he has been convicted under circumstances which indicate a disregard of the rights of others, his license may be withheld.

It has sometimes been contended that an equally rigid examination should be given to the *owners* of motor vehicles before they be permitted to operate them upon the highways; but such contention proceeds upon a misconception and a failure to recognize the clear distinction between an owner as a driver and a hired employee as a driver. The arguments which might be adduced for provisions of law requiring the examination and licensing of professional chauffeurs have no application whatever to the owner of the motor vehicle. The owner driving his own machine is in charge of his own property, and usually has in his care the members of his family. Every consideration of caution and every inducement to care will deter him from recklessness. It will be to his utmost interest, both in the respect of the preservation of the lives of his family and of the integrity of his property, to exercise extreme caution. Furthermore, experience has demonstrated that he does so. It is not too much to say that nine tenths of all the accidents and injuries to person and property are occasioned by the professional chauffeur. He is induced to recklessness by the very expertness of his knowledge and the very skill with which he can handle the machine. Relying upon his experience and his familiarity of operation, he takes chances which others would not take. Furthermore, he is frequently driven to excessive speed by the terms of his employment, under which in the case of some transportation companies his salary consists of a percentage of the amount of money he earns as shown by the meter upon his machine. And then again, as a matter of law, the distinction between professional chauffeurs on the one hand, and the owner of the motor vehicle upon the other, is clear and well defined. The former when he uses the highways for profit is exercising a special franchise given him by the public, and to that extent he is a quasi-public servant, subject to such restraints, limitations, and prerequisites as the public through its legislature deems it wise to impose.

Large Revenue for Highway Improvement.—If the end justifies the means, then the accumulation of a fund for highway improvement would justify the imposition of the very heavy burden of registration fees imposed by the act upon the owners of motor vehicles. Certainly, the end sought—to wit, the care and preservation of the highways—is one much to be desired. But it is more than doubtful whether even so great a desideratum justifies in any respect the levying of a special extraordinary tax upon motor-vehicle users. A tax of this character could only be justified if it were laid uniformly upon all users of the highways, the owners of horse-drawn vehicles no less than the owners of motor vehicles. It is the discrimination against one class of vehicles in favor, and to the advantage, of other classes of vehicles which makes the imposition of the tax an unjust one. It is in the highest degree class legislation, and some day will be abolished. It may be that there should be substituted for it a special tax upon all road vehicles in proportion to the extent to which they use the roads. It is not impossible to find a common basis or standard with reference to which such tax could be proportionately applied, and if a special tax for road maintenance is desirable, then such a standard or unit or uniform basis will be devised, and the law made to accord therewith.

As the exaction of large fees for registration, ranging from $5 to $25, in proportion to the horse power of the vehicle on the rating of the Association of Licensed Automobile Manufacturers, is sufficiently unjust and illogical, the law provides that such registration fees shall be in lieu of all taxes on the vehicle, whether state or local.

Reciprocal Interstate Touring Privileges.—The injustice of requiring the motor-vehicle user, engaged in interstate travel (and most of them are so engaged), to stop at the border of the particular state into which he is proceeding and make application for registration, submit to the requisition of fees, and in some cases sign away his rights by making the secretary of state or other officer his attorney in fact, to receive process for him, is obvious. There is no reason why all the highways of the nation should not be open to the motor-vehicle driver, just as they are to the horse-drawn vehicle driver, provided the machine is properly identified. For the purpose of identification, the number of one state is as good as the number of any other state, and there is no point in requiring the registration of motor vehicles, except for the purpose of identification.

At no very distant day, Congress will enact a statute providing for registration of an automobile at a central bureau at Washington, and the issuance thereupon of a license and an identification mark, which will be good everywhere in this land, and, bearing which, the motor-vehicle driver will be free to travel from Maine to California without let or hindrance, so long as he complies with the police regulations of the various jurisdictions through which he passes in respect of speed, lights, brakes, signals, and the like. Pending the enactment of such a statute by Congress, it is well that so many of the states as possible should go to the extent they may in bringing about reciprocal interstate touring privileges. Therefore, the New York State act provides that nonresidents may use our highways, provided they carry identification marks substantially similar to those required by our own law, and provided the law of the state of such nonresident grants similar exemptions and privileges; this latter so as to induce other state governments to adopt provisions similar to ours.

Finally, it is certain that a better law than the New York State law is conceivable, and it is also certain that it would be a better law and a more logical and scientific law, if it consisted of not over a half dozen provisions devoted exclusively to the matter of registration and identification, because it is only in those requirements that motor vehicles differ from all other vehicles. The rest of the provisions sometimes found in motor-vehicle laws have no exclusive reference whatever to motor vehicles, but should be incorporated in the general highway laws applicable to all vehicles alike—as, for example, the provisions respecting lights, the provisions respecting brakes, the provisions respecting a means of warning of the vehicle's approach, and the provisions respecting speed. Some day the motor-vehicle laws will be in the short and simple form suggested. The tendency to regard the subject in a sane and dispassionate light increases from day to day, and will continue to increase until we shall have put motor-vehicle laws in the place where they belong.

The efficacy of any law depends upon the wisdom and energy with which it is enforced, and it may be safely prophesied that, if the motor-vehicle law of New York State is enforced in respect of all of its provisions, thoroughly and sensibly, it will prove adequate to the situation which it was designed to meet. (See XXIX, *Automobiles.*)

SOCIAL EVILS

Gambling.—Anti-gambling legislation has taken a more radical form in the State of New York during the past year.

Under section 973, chapter 88, laws of 1909, as now amended, any corporation or association or the officers thereof, or any copartnership or individual, who keeps a room . . . or any other inclosure or place for gambling, or for making any wagers or bets made to depend upon any lot, chance, casualty, unknown or contingent event, or on the future price of stocks, bonds, securities, commodities or property of any description whatever, . . . is guilty of a misdemeanor. This amendment took effect Sept. 1, 1910.

Under section 986, chapter 88, laws of 1909, as now amended, any person who engages in pool-selling or book-making, with or without writing, at any time or place, or who occupies any place or stand of any kind upon any public or private grounds within the state, with books or papers, for the purpose of recording bets or wagers or of selling pools, or any person who records bets or wagers or sells pools or "makes books," with or without writing, upon the result of any trial or contest of skill, speed or power of endurance, of man or beast, or upon the result of any political nomination, appointment, or election; or upon the result of any lot, chance, casualty, unknown or contingent event whatsoever . . . is guilty of a misdemeanor, and upon conviction is punishable by imprisonment in a penitentiary or county jail for a period of not more than one year.

This act took effect Sept. 1, 1910.

Prostitution.—Unusual interest has been aroused within the last year or more in the so-called white slave trade. Investigations have been made and laws and ordinances enacted by Federal, state, and municipal authorities.

The Federal immigration commission made a report in Dec., 1909, on the importation and holding of women for immoral purposes. This report declares that only a small percentage of such women arriving in this country are discovered and debarred at the port of entry or afterwards apprehended and deported. Between 1904 and 1908 205 alien women were debarred as prostitutes; 124 of these were in 1908.

In 1909 more rigorous policies were adopted and deportations for the first six months were 273, New York being the chief port of arrest. The number of women fined, held, sent to the workhouse, or reprimanded in the Night Court of New York, Nov. 15, 1908–March 15, 1909, was 1,512 native-born, 581 foreign-born—total, 2,093. Of the foreign-born, the five nationalities highest in the list were Hebrews 225, French 154, German 69, Irish 29, South Italian 26.

The annual report of the commissioner general of immigration, Feb., 1909, contains the following summary on this subject:

> As a preliminary to perfecting plans for the exertion of special efforts toward ridding the country of alien prostitutes and procurers, the bureau has conducted in the past fiscal year a general investigation covering all the largest cities of the United States. As the result of this investigation, and of the work which has since been accomplished, the bureau is satisfied that an enormous business is constantly being transacted in the importation and distribution of foreign women for purposes of prostitution, which business also includes the seduction of alien women and girls who have entered the country in a regular manner for legitimate purposes, and to some extent of American women and girls. In some cities the traffic is more or less connected with local political conditions, and the police and other municipal authorities are either implicated or helpless to assist in even the partial eradication of the evil.

Growing out of these investigations the Federal Congress enacted what is known as the White Slave Traffic act, approved June 25, 1910. Section 2 provides:

> That any person who shall knowingly transport or cause to be transported, or aid or assist in obtaining transportation for, or in transporting, in interstate or foreign commerce, or in any territory or in the District of Columbia, any woman or girl for the purpose of prostitution or debauchery, or for any other immoral purpose, or with the intent and purpose to induce, entice, or compel such woman or girl to become a prostitute, or to give herself up to debauchery, or to engage in any other immoral practice; or who shall knowingly procure or obtain, or cause to be procured or obtained, or aid or assist in procuring or obtaining any ticket or tickets, or any form of transportation or evidence of the right thereto, to be used by any woman or girl in interstate or foreign commerce, or in any territory or the District of Columbia, in going to any place for the purpose of prostitution or debauchery, or for any other immoral purpose, or with the intent or purpose on the part of such person to induce, entice, or compel her to give herself up to the practice of prostitution, or to give herself up to debauchery, or any other immoral practice whereby any such woman or girl shall be transported in interstate or foreign commerce, or in any territory or the District of Columbia, shall be deemed guilty of a felony, and upon conviction thereof shall be punished by a fine not exceeding five thousand dollars, or by imprisonment of not more than five years, or by both such fine and imprisonment, in the discretion of the court.

The bill provides further penalties for persuading, inducing, and coercing women and girls to go to any place within the range of interstate or foreign commerce for prostitution or immoral purposes. This act applies to Alaska and the Canal zone. Public sentiment has been aroused throughout the country and laws against the procuring and selling of women for immoral purposes have been passed in Maryland, Rhode Island, New Jersey, Virginia, Massachusetts, Ohio, South Carolina, New York, and Louisiana.

A number of cities including New York, Chicago, Washington, and Seattle have made special investigations and have taken measures to suppress the traffic.

Elmer E. Todd, United States district attorney, summarized the work of the Federal Grand Jury in Seattle, which adjourned May 11, 1910, as follows:

> There are between seven and eight hundred men in Seattle who live by the revenue from the "white slave" traffic, almost all of whom could be reached by the state courts if proper effort were made. It was established by the grand jury that the Federal Government has gone as far as the law allows. It is now up to the state authorities, who could break up this business in short order.

In Chicago the society headed by Adolf Kraus has done effective work in stamping out the traffic in that city.

In New York City the grand jury, with Mr. John D. Rockefeller, Jr., as chairman, with the assistance of Mr. Charles S. Whitman, district attorney, did thorough work. Its report concluded with a recommendation that a commission be appointed by the mayor to make a careful study of the laws relating to and the methods of dealing with the social evil in the leading cities of this country and of Europe, with a view to devising most effective means of minimizing the evil in New York City. The most complete investigation of any local city is that of the committee of fourteen in New York, which published a report of 268 pages on the *Social Evil in New York City*, a study of law enforcement.

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The Opium Trade.—The memorial against the Indo-Chinese opium traffic, addressed to the British Government by the World Missionary Conference, held in Edinburgh last June, bears 900 signatures, including those of many distinguished laymen. The preface, written by the Bishop of

Durham, says: "Not many years ago the attitude of China toward the opium trade and the opium habit was commonly said to be at best only half sincere. To say that now is, indeed, impossible. Overwhelming practical proof is afforded all over China to-day that the people even more than the government recognize in opium a deadly national mischief, and are as resolved upon its extirpation as Japan is upon its absolute exclusion. The moral appeal to England made by that one fact is of incalculable weight. Could a deeper dishonor attach to a great Christian power than that it should be truly said of her that she declined to do her all to leave China free to rid herself of the evil thing; that she, the Christian power, maintained, for revenue's sake, claims and interests which tend to retard the deliverance of China? Within the past five years general opinion in England has profoundly altered upon the opium problem. The most earnest protests, as late as 1904, were still received with indifference or even dislike, as the cry of a fanatical clique. It is not so now, under God's providence. This memorial is one proof that it is not. With profound respect the appeal is presented to the government of a state which has made glorious sacrifices for righteousness in the past. And it is accompanied with earnest prayer to God Almighty that that government may find and take the way to remove forever, promptly and in time, this great blot from the moral glory of their country."

XVI. LABOR AND LABOR LEGISLATION

ECONOMIC PRINCIPLES OF LABOR

Henry W. Farnam

Introduction.—The term labor is used here in its popular sense. It does not include the labor of the banker, the promoter, the lawyer, etc. Nor, on the other hand, does it include the labor of the slave. It is applied to that form of labor the remuneration for which is called wages.

The wage system has received special significance in the nineteenth and twentieth centuries on account of production on a large scale which has involved the employment of wage receivers in large groups, and has, therefore, facilitated united action on their part.

In the now normal case of industrial freedom, wages are determined by the "higgling of the market," or by demand and supply. If many laborers are seeking employment, the demand being equal, wages tend to fall; if few, wages tend to rise. Economists have not, however, confined themselves to studying the mechanism by which wages are determined. They have demanded a theory, in order to explain the causes which lie back of this mechanism, and to show us why, at certain times and in certain places, wages tend to be high, at other times to be low. For many years the wage-fund theory was commonly accepted by the classical economists. According to this view, the capital set aside for wages constitutes a fund which limits the demand for labor. General wages can, therefore, not rise, unless either through an increase in the fund or a diminution of the number of laborers. According to Ricardo higher wages tend to increase the population, and thus the tendency of wages is to relapse after every advance to the standard of living held by the laborers. This somewhat pessimistic view was exaggerated by Lassalle; according to his "iron-wage law," wages always tend to fall to the amount needed for bare subsistence. If this is the case, it is clear that any permanent betterment of the laboring classes is impossible under the wage system, and this has been for many years the popular argument in favor of socialism.

In sharp contrast to both of these theories, stands the so-called residual theory of Gen. Francis A. Walker. According to him, wages are really paid not out of capital but out of the product of labor. Any increase in this product tends in the long run to benefit the laboring classes, who receive all that is left after interest, rent, and profits have been taken out.

Few economists at the present day accept any one of these theories as completely explaining wages. Most agree in thinking that, while under a condition of freedom of contract, wages are determined by the interaction of supply and demand, the causes which influence and limit these are very complicated. They also realize that even when the general causes determining the demand for and supply of labor are constant, they do not operate with absolute precision, but that there is room for an appreciable margin between the minimum which the laborer is willing to take and the maximum which the employer is willing to pay. Within this margin, wages may be moved up or down in accordance with the superior bargaining power of the parties concerned. In other words, it is quite conceivable that general economic conditions might justify higher wages than are paid, and yet that through ignorance of these conditions, or inability to assert their demands, the wage workers may fail to get what circumstances warrant. On the other hand it is also possible that wages may temporarily remain on a higher level than business conditions justify. Finally, not only economists, but wage workers recognize the distinction between nominal wages, or the amount of money received, and real wages, or the commodities which can be purchased with that money. Hence, money wages are by themselves no sure index of the well being of the laboring classes. We must also know what their wages will purchase.

It is often difficult for the individual to influence these conditions, because it is generally easy to fill a single place. The demands of the workers are more effective if many act in common. Hence the strike, or simultaneous cessation of work has become a common feature of labor movements during the past century; they have been numerous and unusually significant in 1910. Trade unions have also arisen in order to give a greater effectiveness to united action by making organization permanent, and putting it under competent leaders. United action may also be effective in respect to real wages, and wage workers have come to realize that, by coöperating in their purchases, they can secure the advantages of wholesale rates and save the profits of the middle man. Hence the voluntary labor movement has shown itself in strikes, in trade unions, and in coöperation.

But purchasing power is not the only thing that affects the wage receiver. His well being is also dependent upon the sanitary conditions under which he works, the hours of labor, the prevention of and insurance against accidents and sickness, the provision for old age and invalidity, and other incidents. Voluntary action is often powerless to affect these, especially in the case of children and women, who lack the strength and ability to assert their demands. These conditions may affect not only the health of the individual but that of the race. In many cases these evils do not correct, but rather tend to perpetuate themselves. Unsanitary conditions of employment may permanently lower the vitality and earning power of whole classes of the population, and thus make it difficult for an employer with the best of intentions to pay higher wages or spend more money on improving conditions, as long as his competitors are in a position to undersell him. Thus there has arisen a demand for legislation which shall establish minimum standards in the conditions of labor for all establishments of a certain kind within the same jurisdiction. With the growth of the world market, however, states which permit unfavorable conditions are in a position to take advantage of their backwardness in competing with states which have higher ideals. Hence there has arisen a demand for greater uniformity between the states of the American Union, and in some cases for Federal laws regulating conditions uniformly for all the states, as far as such laws are within the constitutional powers of Congress. Both these movements have led to important legislation in 1910.

The movement for uniformity has even extended beyond the boundaries of a single commonwealth and has become international, and the International Association for Labor Legislation has been organized, in order to promote uniformity between the leading countries of the world, especially in those departments of law which affect the public health.

This department of the AMERICAN YEAR BOOK thus naturally covers two leading topics, the voluntary labor movement as seen in labor organizations and coöperation, and governmental intervention through labor legislation.

THE LABOR MOVEMENT

SELIG PERLMAN

The Shirtwaist Makers' Strike.—During 1910 two big strikes took place in the sweated industries of New York, the shirtwaist makers' and the cloakmakers'. The first spread also in Philadelphia. The general strike of the shirtwaist makers in New York began Nov. 2, 1909. It grew out of a conflict in two shops, one operated by the Triangle Waist Company, and the other by L. Leiserson. In autumn of the year 1908 an unorganized strike had occurred in the shop of the Triangle Waist Company against the system of subcontracting. Under this system, the employer makes a contract with a few workmen for a period of three or four months, agreeing to pay them so much a week for so much work turned out. They rent or loan the machines and encourage them to get the most work for the least money. The strike had come speedily to an end, the employer promising the strikers to organize for them a benevolent society with sick and other benefits. About a hundred workers had joined the society, which was controlled by the firm. After some time the workers became dissatisfied with its management, and a number joined the Shirtwaist Makers' Union. The firm decided to put an end to it by laying off its help under the pretext of lack of work, and advertised in the papers for new help. This precipitated a strike on Sept. 27, 1909.

The second strike which led to the general strike took place at L. Leiserson's shop in the early part of Sept. In both shops, strike breakers were freely used, and the police were active in preventing picketing by the striking girls. In Nov., twenty-eight girls, on picket duty before the shop of the Triangle Waist Company, were arrested and sent to jail. Nov. 18th forty girls were called out at the Diamond Waist Company, because the proprietor was doing work which belonged to the strikers of the Triangle shop. Nov. 22d, a mass meeting of shirtwaist makers was called to consider the expediency of a general strike. The strike was voted, and after two days nearly 25,000 girls were on strike. The grievances comprised long hours (56 to 58 a week and long overtime during the rush season), subcontracting, a heavy system of fines, and low wages. The strikers also demanded the closed shop. The Shirtwaist Makers' Union increased its membership to 21,000 in the course of the strike. The employers also organized an "Employers' Mutual Protective Association." The police made daily arrests of picketing strikers, and the magistrates sent many to jail. This excited public sympathy for the strikers, and many society ladies coöperated with the Women's Trade Union League to further the cause of the strikers. Many of the smaller employers began to settle with the strikers immediately after the beginning of the strike. The larger firms held out much longer, but many made individual settlements with the union.

Mr. Leiserson settled with the strikers Jan. 22d, and by the middle of Feb. 21,000 strikers employed in 307 shops had made individual settlement with the employers. The conditions of settlement were favorable to the strikers in the matter of wages and hours, and the closed shop was not waived in any instance. Subcontracting was so regulated that the union believed it would be harmless. It was also agreed that all differences should be adjusted between employer and employees by a committee of the shop and a representative of the union.

In Feb. 7,000 shirtwaist makers in Philadelphia struck, presenting demands similar to those of the strikers in New York. The strike was speedily settled, the employers agreeing to a permanent arbitration board, and to employ union men without discrimination, and the strikers to the open shop. It was also agreed that a committee of three in each shop should arrange the wage scale. Other concessions by the employers were the abolition of charges for needles, straps, or ordinary wear and tear; 52½ hours a week; no work on Saturday after one o'clock; future grievances to be settled, if possible, by employers and employees in individual shops; if impossible, to be left to a permanent arbitration board made up of representatives of the union, the employer, and the general public, whose decision should be final. Subcontracting, which in Philadelphia covers tenement-house work, was not covered by the agreement.

The New York Cloak and Suit Makers' Strike.—This was one of the largest strikes of the year, and like the shirtwaist makers' strikes, it involved an unorganized mass of workingmen employed in sweating shops. July 6th, the day it began, there were 20,000 members of the International Ladies' Garment Workers' Union. Within two weeks all but 2,000 of the remaining workers in the trade had joined the union, swelling its membership to 70,000. The two most serious grievances were subcontracting and wages. The subcontractors are piece workers who employ helpers, generally at week's pay. The system has resulted in the hiring of low paid and highly specialized week workers, the majority of them girls, with a decreased demand for skilled operators. One of the largest shops, employing 500 operators, pays but fifteen of these direct. These fifteen have two series of subcontractors under them and the helpers at the bottom of the system receive from $3 to $6 a week. The strikers demanded the abolition of subcontracting and an adjustment of piece prices that would give the operator about seventy-five cents an hour, on the understanding that a piece worker seldom gets more than seven hours a day. They would allow one apprentice paid by the piece maker and would put the higher grade of helpers on an independent basis at week's pay. The helpers' wages ranged from $3 to $8 a week during the season, which runs from six to seven months, with practical idleness from Nov. 15th to Jan. 15th, and the whole of June, with part time during other months. For sample makers during the season pay was from $18 upward, for skilled operators from $15 upward; cutters about the same, and pressers from $14, and finishers from $12 upward. The strikers demanded a considerable increase for all classes of workers and double time for all overwork. Another demand was a forty-nine-hour week with maximum overtime of two and one half hours a day, instead of an eleven-hour day and indefinite overtime. A third demand was the abolition of foot power in running machines and no more charges against the workers for electricity. The strikers also demanded the closed shop. The latter became the single issue of the struggle, the Employers' Association being willing to make concessions on all other points. Twice negotiations were broken off on this question.

The third conference was brought about in Aug. by Louis D. Brandeis, of Boston, who acted as chairman. The employers were willing to grant practically all demands, but a settlement could not be reached, because the strikers insisted upon the closed shop, as a means to insure adherence to any agreement. When Mr. Brandeis reminded them of their promise, they modified it to "union shop." This means that nonunion men can be employed if there are not enough union men available, but they must join the union after being employed a short time. The employers rejected both the closed and union shop. Mr. Brandeis then suggested the "preferential union shop," which meant that the manufacturers recognize the union, and agree as between union and nonunion men of equal ability, to give preference to union men. The conference brought no results. The employers then petitioned for an injunction against the strikers. Judge Goff decided that the strike for the closed shop was, in effect, a conspiracy in restraint of trade, and issued a permanent injunction against the International Garment Workers' Union and others. This injunction aided in bringing the strike to an end, and Sept. 3d an agreement was signed. The strikers won all their demands except the closed shop. The employers agreed to grant the "preferential union shop" in accordance with Mr. Brandeis's proposal. The agreement reads that "each member of the manufacturers is to maintain a union shop, a 'union shop' being understood to refer to a shop where union standards as to working conditions, hours of labor, and rates of wages as herein stipulated prevail, and where, when hiring help, union men are preferred, it being recognized that since there are differences in degrees of skill among those employed in the trade, employers shall have freedom of selection as between one union man and another, and shall not be confined to any list nor bound to follow any prescribed order whatever." The hours of labor were limited to fifty a week, nine hours constituting a day's work for five days in the week, with five hours on the sixth day. Overtime work was limited, and when performed, to be paid for at double the usual pay. A minimum scale of wages was adopted, which was slightly higher in some cases than the scale proposed by the manufacturers, and in others slightly lower than that suggested by the strikers. The agreement also provided for the installation of electric power for the operation of machines by Dec. 31st, without charge for power by the employers. Three boards were established by the agreement—a sanitary board, to consist of two nominees of the manufacturers, two nominees of the employees, and a representative of the public, to be selected by counsel for both sides. This board is to establish standards of sanitary conditions to which the manufacturers and the employees shall obligate themselves. An arbitration board will consist of a member from the employers, one from the unions, and a representative of the public, and to it all differences arising between employers and employees shall be submitted. The third board will consider all differences of minor nature. It will consist of two members each from the manufacturers and the union. A very essential feature of the agreement is the total abolition of subcontracting and home work. This agreement practically abolished the sweating system in the cloak and suit making industry of New York City.

Strike on the Great Lakes.—The strike between the seamen on the Great Lakes and the Lake Carriers' Association continued through the navigation season of 1910. For several years previous to 1908, the unions had entered into agreements with the Lake Carriers' Association. In the spring of 1908 they requested a conference to arrange an agreement as usual, but the employers declined. Shortly afterwards the employers demanded that the men quit their unions, but the matter was in abeyance during 1908. In the spring of 1909 the employers again declined an agreement with the unions and introduced the passport system, which precipitated the strike of 10,000 men, sailors, marine firemen, and cooks. Under this system each employee was obliged to have a certificate of membership in the welfare plan conducted by the Lake Carriers, and an industrial passport called "Discharge Book" upon which the captain of the vessel marks the character of each. No employment can be obtained without presenting the "Discharge Book," which is deposited with the captain except when its owner is out of work. Authority is given to the ship officers to deprive seamen of their passports. Unemployed seamen must congregate in "assembly rooms," and preference for employment is given to the frequenters of the assembly rooms. Strict submission to the rules of the assembly rooms is demanded. The strike lasted through the navigation season of 1909. The Lake Carriers were able to operate their ships with nonunion labor. The situation did not change during the season of 1910. The strike still nominally continues. The Lake Carriers have declined propositions to arbitrate from arbitration boards of Wisconsin, Michigan, Ohio, New York, Indiana, and Illinois, and also of the National Civic Federation.

Strike of Bituminous Coal Miners.—The joint agreement between the mine operators in the bituminous mining industry and the United Mine Workers expired April 1, 1910. At the twenty-first annual convention of the United Mine Workers, held at Indianapolis in Jan., it was decided to demand an increase of wages and other concessions. The same convention also decided that "all districts in which contracts expire April 1st be authorized and instructed to negotiate wage agreements, but no districts shall join a contract until all wage agreements have been negotiated." The Illinois operators had refused to be included in the central competitive field, because of differing conditions. The representatives of the miners of Western Pennsylvania, Ohio, Indiana, and Illinois met the operators in a joint conference at Toledo, O., in Feb. The operators objected to the seating of the Illinois miners' representatives on account of the absence of Illinois operators: the joint conference broke up in consequence. Another joint conference was called to meet in March in Cincinnati, O. The Illinois operators again declined the invitation, with the result that the Illinois miners also took no part in the conference. At the same time an international convention of the United Mine Workers met in Cincinnati. This convention formulated the final demands of the miners, of which the principal was an increase of five cents in the price of mining per ton on inch and quarter screen lump coal pick mining, and three cents per ton run coal; for machine coal an increase of four cents on screen lump coal, and three cents per ton on run coal in the bituminous district of Indiana; inside day wage scale to be advanced 5.55 per cent; all harrow, dead work, room turning and outside day labor to be paid a proportional advance. The joint conference could reach no agreement, and the convention decided that contracts may be negotiated and agreed upon separately by states, districts, or groups of districts. April 1st, work was suspended by nearly 300,000 miners. After a brief delay the operators granted the increase of wages demanded, except in Illinois, the Southwest and the Lucerne field in Pennsylvania, where nearly 100,000 miners were on strike. The most difficult situation developed in Illinois. There the miners adopted at their convention at Peoria the demand that the operators pay the wages of the shot-firers, which sometimes reached 2½ cents per ton, also the wiping out of the three cent per ton differential that had existed in Williamson and Franklin counties, and adding two cents per ton extra in the differential of the North Illinois mining rate; 22,000 Illinois miners reached agreement with their employers on the basis of these demands; 45,000 continued on strike. In July the international executive board of the United Mine Workers' Union took the matter into its own hands and concluded with the Illinois operators a provisional agreement, under which the employers granted nearly the entire increase of wages, agreed to pay the wages of the shot-firers not to exceed 1½ cents per ton, but insisted that the engineers and firemen be placed under the direct jurisdiction of the international executive board, and be granted the right of appeal to the same board in case of disputes. This provisional agreement was submitted to a referendum vote of the Illinois miners, and rejected. It led to a violent conflict between the international officers and the Illinois district officers, who claimed that the former had usurped their rights. A special international convention met in Indianapolis in Aug. to pass upon this conflict, but it left matters much as before. The strike in Illinois was settled Sept. 8th. The employers adopted the Peoria scale, and the miners returned to work.

The miners' union paid out $674,216.12 in strike benefits from April 1st to Aug. 8th.

Columbus Street Car Strike.—A labor controversy in Columbus, Ohio, brought about the longest and most desperate attack upon government and order which has ever been experienced by an American city. In the spring of 1910 the employees of the local street car company formed a union, and demanded improved conditions of labor. The company discharged thirty-five men who had been most active in the organization; whereupon in April the men struck, but returned on the understanding, as they supposed, that the men thus affected should be reëmployed. They struck a second time in May, and on July 24th, struck a third time. The men claimed that their leaders were discriminated against; the company claimed that the strike was a movement to drive non-union men out of their service. The state board of arbitration believed that the company was at fault. Mayor Marshall was supposed to have advised the men to strike, and the police did little to protect the strikebreakers who were put on by the company, and finally refused duty. There was a succession of dynamite explosions, wrecking cars and the company's property. The governor twice called out the militia, but the strike has dragged along without any definite settlement. A number of people, including passengers who had ventured on the cars, were killed, and there seemed to be no force in the city or state which could restore order or bring an end to this ruinous controversy. The city was in a state of excitement, and occasional uproar for more than four months.

Los Angeles.—The office of the Los Angeles Times was blown up Oct. 1, 1910, and twenty-one people were killed. Inasmuch as the paper had for years been carrying on a contest with the labor unions because of its refusal to unionize its force, this wholesale murder was thought to be an act of revenge. Large rewards were offered, but every effort to find the criminals, or even to discover where they got the dynamite, has so far proved a failure.

Dec. 25th, the Llewellyn Iron Works, which have long had trouble with the metal-workers' union, were injured by dynamite.

The Express Strike.—A strike of the employees of the large express companies in Jersey City began Oct. 21, 1910, which spread to New York and later involved also the local and baggage expresses and the taxicabs. No grievance was presented at the time of striking, though there was complaint of the hours of labor. The probable purpose was to unionize the force. The police gave protection, but express wagons were followed by mobs, who destroyed the wagons, threw away the packages, and beat the strikebreaking drivers. The strike was finally settled by taking back all the employees who had not joined in acts of violence, and allowing those who desired to join the union and wear the union button.

Strike Benefits.—Reports from eighty international organizations and from a number of local unions affiliated with the American Federation of Labor, show that there were during the year ending Aug. 31, 1910, 827 strikes, involving 341,448 workmen. Of the total number, 470 were won, 84 compromised, 62 lost, and 259 were pending on that date. The total cost of the strikes to the unions was reported as $3,727,277. Adding the donations made by local unions to other unions, a grand total of $3,860,997, expended to sustain members on strike during the past year.

WELFARE SYSTEMS

The Steel Corporation.—The United States Steel Corporation introduced a comprehensive system of relief for work accidents. This welfare plan affects 225,000 men employed by the corporation and will be in operation for one year. If it meets with success it will be continued. The plan disregards the idea of negligence, and may be said to recognize that a share of the income loss due to work accidents should be a charge upon the industry—it covers both hazardous and nondangerous employments, and places the entire cost of the relief on the business without any contribution from the employees. The plan emphasizes the point that the payments are for relief, and not for compensation; accordingly single men are treated less liberally than married men living with their families. All employees who accept and receive relief are required to sign a release to the company. No relief will be paid if suit is brought.

The entire plan falls into three parts: temporary disablement relief, permanent disablement relief, and death relief. Under the terms of temporary disablement relief single men who have been five years or less in the service of the company will receive thirty-five per cent of the daily wage they were receiving at the time of the accident. Single men of more than five years' service will receive an additional two per cent for each year of service over five years. Married men living with their families will receive fifty per cent of their wages if in the employ of the company for five years or less, and two per cent for each additional year. For each child under sixteen years five per cent will be added. The maximum of temporary disablement relief is $1.50 daily for single men and $2 for married men.

In permanent disablement relief wide latitude is left the company's managers. The plan prescribes that they shall exercise discretion in such a manner as to afford substantial relief in correspondence with the following amounts: twelve months' wages for the loss of a hand; eighteen months for the loss of an arm; nine months for the loss of a foot; twelve months for the loss of a leg, and six months for the loss of an eye.

For death relief the company will pay an amount equal to eighteen months' wages in the case of married men living with their families who have been in the service of the company five years or less and have widows, or children under sixteen years of age. For each additional year of service above five years three per cent shall be added. For each child under sixteen ten per cent shall be added to the relief. The relief granted cannot exceed $3,000.

Thus the greatest benefits will accrue to married men. In their case the disablement benefits are comparatively high and there is a death benefit, while in the case of single men the disablement benefits are low and there is no death benefit. It should be also noted that married men will be entitled to the higher benefits only in case they live with their families. This would exclude immigrants with nonresident families, unless the manager of the relief sees fit to exercise his discretionary power in their favor. Wide latitude has been left the company's managers in administering relief.

International Harvester Company.—A more open-handed system of relief for work accidents was introduced May 1st by the International Harvester Company. This company had established in Sept., 1909, a benefit association and an old-age pension. The scale of compensation is as follows: In case of death, three years' average wages, not less than $1,500 nor more than $4,000; for the loss of a hand or foot, one and one half years' wages, not less than $500 nor more than $2,000; for loss of both hands or both feet, or one hand or one foot, four years' wages, not less than $2,000; in case of other injuries, one fourth wages during the first thirty days of disability, beyond thirty days, one half wages, during the continuance thereof, but not for more than two years from the date of the accident. Thereafter a pension will be paid, if total disability continues. Provision is made also for increasing the benefits to be paid during the first thirty days of disability to an amount equal to half wages. This additional benefit is conditioned upon the contribution of six cents a month by employees earning fifty dollars or less a month; eight cents a month by those earning more than fifty dollars and less than $100; and ten cents a month by employees earning more than $100. The greater liberality of the Harvester Company's plan, as compared with that of the Steel Corporation, is evident, the minimum of relief it grants in every fatal case exceeding the maximum which even an employee of ten years' standing and five children would receive under the Steel Corporation's plan. Another point of difference is that the Harvester Company leaves the injured employee free to sue the company for damages. But if the terms of compensation for injury or death are accepted by the employee, he will be required to sign a release absolving the company from further responsibility.

Metal Trades.—The National Metal Trades Association announced in May a mutual insurance scheme, applicable in all the shops managed by members of the association throughout the country. It is a combination sickness and accident policy, contracted for with an accident insurance company, paying from $20 to $60 a month for disability from either cause. While no benefits are paid for the first seven days, full benefits are allowed, including the first week, in case of disabling sickness for thirty days. In case of death from natural causes, $100 is paid the insured. The cost to each employee is one dollar a month.

INCREASES IN WAGES

Owing to the increased cost of living there was during 1910 a strong upward movement of wages. This movement became particularly strong in March. The employees on the eastern territory of the Baltimore and Ohio Railway secured by arbitration under the Erdman act an average increase of six per cent. The Erdman act was also invoked in the cases of 27,000 locomotive firemen and enginemen employed on fifty-one western railways, and of 8,000 switchmen working in railway yards west of Chicago, except St. Paul and Minneapolis. The Federal arbitration board awarded in March a twelve and one half per cent increase to the firemen and enginemen, and a raise of nine cents per hour to the switchmen. The wages of more than 400,000 men were increased during March, in most cases by the voluntary action of the employing corporations. The rate of increase accepted by the majority of the railways was six per cent. The total increase of wage payment of the New York, New Haven & Hartford amounted to $1,000,000. The Pennsylvania Railroad added six per cent to the wages of its 195,000 employees. The Reading Company increased the wages of its 37,000 employees, adding $1,500,000 to its pay roll. The Western Maryland Road gave an eight per cent increase. The operators employed by the Big Four also won an increase by arbitration. In April the United States Steel Corporation increased by six per cent the wages of its 225,000 employees. The New York Central & Harlem River Railroad offered a six per cent increase, which the employees declined. Both sides agreed to refer the matter to arbitrators. The two arbitrators chosen were E. E. Clark, of the Interstate Commerce Commission (formerly grand master of the Conductors' Union), and P. H. Morrisey, president of the Railway Employee Investors' Union (formerly the head of the Trainmen's Union). The arbitrators handed down in May an elaborate schedule of wages, awarding an average increase of nine per cent on the Central system lines west of Buffalo, and accepting the Baltimore & Ohio settlement for the lines east of Buffalo. The Delaware & Hudson and the Lackawanna accepted the award of the New York Central arbitration. In May the Baltimore & Ohio gave a six per cent increase to 60,000 employees who had not been included in the contract closed in March. The Postal Telegraph and Cable Company announced an increase from five to twenty-five per cent, according to merit, ability, and length of service. The Erie Company made an increase equivalent to that of the Baltimore & Ohio. The Central New England Road gave an increase of about twenty per cent. The Standard Oil Company granted an increase from six to ten per cent, adding to its pay roll from $6,000,000 to $10,000,000. In July an increase ranging from twelve to thirty per cent was made by the southeastern railroads, following arbitration under the Erdman act.

It is interesting to note that settlement of railroad wage controversies by resort to the Erdman act, a course which involved the participation and the decision of Federal officers, has invariably been characterized this year by a grant of increased pay. One of the results of the wage movement among the railroad employees was the standardization of wages on the eastern roads. The strikes conducted during the year for higher wages generally ended with a victory for the employees.

On Nov. 23d the Brooklyn Rapid Transit Company announced that it would increase the pay of motormen, conductors, and guards on its surface and elevated roads five per cent. The advance will be made voluntarily by the company. It will go into effect in January.

The increase in wages will carry with it an advance in standing for all of the men with clear records. Each man in good standing will go up a grade on Jan. 6, and, accordingly, will receive, in addition to the five-per-cent increase announced, a further increase which his new grade will entitle him to.

The advance will cost the company about $300,000 annually on its payroll. Last April wages were increased close to five per cent, and assurance was given to the men of another increase of two and a half per cent after the first of the year.

HOURS OF WORK

The changes in hours of labor were less considerable than the changes in wages, since the labor movement derived its main impulse from the increased cost of living. A change from a nine-hour to an eight-hour day was conceded in March to the metal trade workers in the San Francisco district. The Lehigh Valley Railroad Company granted in January a ten-hour day to its conductors and engineers in place of a twelve hour. The firemen employed by the same railway obtained a similar concession on April 4th. In April the United States Steel Corporation declared its intention to discontinue Sunday work in all its mills, and on its railroads (about 2,000 miles of track) so far as possible. In May the National Association of Lithographers decided to grant the eight-hour day, instead of the nine-hour day.

COLLECTIVE AGREEMENTS

The first report of the British Board of Trade on collective agreements between employers and employees was published in Oct., 1910. Summary:

The collective agreements of a general trade or district character known to the department, of which particulars are given in this volume, number no less than 1,696, viz., thirty sliding scales, 563 piece-price lists, and 1,103 working agreements of various kinds. The total number of work people whose conditions of labor are specifically regulated under the provisions of these agreements (after allowing for work people affected by more than one agreement) is estimated to be 2,400,000. The distribution according to trades is shown in the adjoining table.

	Number of Agreements.	Number of Work People.
Mining and quarrying	56	900,000
Transport trades	92	500,000
Textile trades	113	460,000
Metal, engineering, and shipbuilding	163	230,000
Building trades	803	200,000
Clothing trades	303	50,000
Printing trades	79	40,000
Other trades	87	20,000
Total	1,696	2,400,000

Commenting on the general influence of collective agreements, the report observes:

> The wide prevalence of these arrangements in our most important industries must have an important influence on industrial enterprise; for when the level of wages, the length of the working day, and other principal conditions of employment are regulated, for specified periods of greater or less duration, by clearly defined agreements, the employers concerned must be enabled to calculate with precision that part of the cost of production which will be represented by labor; further, when these agreements bind the whole or a very large proportion of the firms engaged in a given trade, the danger of undercutting by rivals who find it possible to obtain labor at a lower price is materially reduced. . . . Such agreements imply a highly developed state of industry and the existence of some form of organization among both employers and work people. When such conditions do not exist, agreements of a general character between all or nearly all the employers and work people in each trade or district are, generally speaking, impossible, because there is no machinery for bringing them about or for enforcing their provisions.

CHILD LABOR

The child labor committee has been organized six years, and its secretary, Owen J. Lovejoy, makes the following summary of legislation secured in the several states, to mitigate the conditions surrounding the employment of children in industry during that period. He divides the states into three groups, the western states being those west of the line from Minnesota to Louisiana:

	Number of States.			
	North.	South.	West.	Total.
Child-labor law first passed	1	3	1	5
Compulsory education law first passed	1	3	3	7
14-year age limit in factories and stores	7	3	7	17
14-year age limit in mines	3	1	4	8
Eight-hour day	4	–	7	11
Other reduction of hours	7	4	2	13
Prohibition of night work under 16 years	8	3	7	18
Proof of age required	9	1	7	17
Certificate of physical fitness to work	10	–	3	13
Enforcing agency established	2	7	4	13

In addition to this Congress has enacted for the District of Columbia a law which provides fourteen years as the age limit in factories and stores, an eight-hour day, and prohibition of night work under sixteen, requires proof of age, and establishes an enforcing agency. Also many states have perfected their laws, especially in administrative details, to a degree not indicated by this table.

Aids to Employment.—The National Employment Exchange, which was established as a result of a report of the Russell Sage Foundation, showing the necessity for some reputable employment bureau to protect those who seek work from the deceptions of which they are often victims in commercial bureaus, made its first annual report in Oct., 1910. Otto T. Bannard, the president of the exchange, states its purpose as follows:

> The purpose of the exchange is to be useful to the community, and the history of certain efforts which had been discontinued led to the conclusion that permanence and stability could be obtained only by a fund from which the deficit could be met for the first few years. It was agreed that fees should be charged with the hope that the exchange would become self-supporting before the fund was exhausted, and because a business rather than a charity would attract a better class of both employers and employees.

In the period ended Sept. 30, 1910, the exchange placed 4,120 men in employment as laborers and 537 situations were secured for applicants through the more recently established mercantile bureau. Although the exchange did not pay expenses the earnings were $14,170.05, which the officers regard as an excellent beginning.

The offices of the exchange are at 14 State Street and 211 Grand Street, New York, both for manual labor, skilled and unskilled, and at 47 West Forty-second Street, which is a general mercantile bureau for men and women.

OLD-AGE PENSIONS

The movement for the payment of old-age and invalid pensions is spreading rapidly in Europe, state pension systems being now in effect in Belgium, Denmark, France, Germany, and Great Britain, and under consideration in Austria, the Netherlands, and elsewhere. They also exist in Australia and in New Zealand. The old-age pension laws in Queensland, Victoria, and New South Wales have been or will be superseded by old-age pensions paid by the Federal Government. The subject is now under investigation in Canada. A bill in the Massachusetts legislature of 1907 proposed a pension of $5 per week for all persons sixty-five years of age, or over, who applied for it. This led to the appointment of a commission to investigate thoroughly the whole subject of old-age pensions. This commission submitted important reports in 1909 and 1910, reviewing the progress of the old-age pension legislation in all the countries where it is in effect. This was the first movement in the direction of such legislation in the United States. A similar commission is now preparing a report in New Jersey.

Mr. Frederick L. Hoffman calculated for the Massachusetts commission that the minimum cost of state pensions of $2.50 per week, on the assumption that forty per cent of pensionable persons should apply for them, the pensionable age being put at sixty years, would be $13,138,000 per year for Massachusetts; at sixty-five years, $8,419,000; and at seventy years, $4,982,000. For the entire United States at this last age, he found the cost would be $106,605,000. Mr. Hoffman found that less than two per cent of the Massachusetts population sixty years old and over were in almshouses; in his opinion, therefore, the most pertinent inquiry is to ascertain the condition of the other ninety-eight per cent.

Australia. — The invalid and old-age pension act of 1908 provides for the payment of invalid and old-age pensions at such rates as the commissioner deciding the question deems sufficient. The amount must not exceed £26 a year, nor must the pensioner's whole income (including the pension) exceed £52 a year. Old-age pensions are granted to persons who are at least sixty-five years of age and have lived in Australia at least twenty-five years. Invalid pensions are granted to persons who have lived at least five years in Australia, have there become incapacitated, and have not other sufficient means of support.

Denmark.—Enactments of 1902 and 1908 provide for the aged poor. Recipients must be over sixty years of age, of good character, and must have had their domicile in the country for the preceding five years without receiving public charity. The assistance granted may be in money or in kind, or by abode in an hospital. The subvention is paid by the commune of domicile, and half of it is refunded by the state. For the year ending March 31, 1908, 71,185 persons were relieved, of whom 53,008 were principals and 18,177 dependents. The total expenditure was £489,200, of which £242,660 was expended by the state.

France.—An act was passed in 1905 for the relief of the aged poor, the infirm, and the permanently incurable. It provided that the cost of the scheme should be borne by the communes, departments, and the state. The number of persons registered for relief on June 30, 1909, was 508,167. The cost to the state alone for 1909 was 43,000,000 francs; for 1910, 46,000,000 francs. The old-age pensions law of April 6, 1910, provides for all wage-earners old-age pensions toward which both employers and workers contribute. The amount of the pension will be calculated on the basis of the sum of the contributions paid up to the sixty-fifth year of the worker's life. To this the state will add an annuity of sixty francs, and this will increase the pension of subscribers for the longest term contemplated to 414 francs ($82.80).

Germany.—Under an imperial law of 1883 and amending acts, workmen must be insured against sickness, and must themselves pay two thirds of the contributions, their employers paying one third. The insurance institutions may be communal or connected with factories or trade unions or sick clubs, but they are all subject to government supervision and control. For accident insurance, under an act of 1884 and amending acts, the contributions are paid entirely by the employers, and they, for mutual protection, have united into associations according to the nature of the industries in which they are engaged. The working of these insurance associations is controlled by the government. For invalidity and old-age insurances, under an act of 1889, amended in 1899, the contributions are paid half by the workmen and half by their employers, while toward each pension the government grants an annual subsidy of $12. The employers are responsible both for their own and the workmen's contributions, but the latter may be deducted from wages paid subsequently. The old-age pension is given on the completion of the seventieth year of the workman's age. The amount expended in compensation under the invalidity and old-age pensions law in 1906 was £8,301,957.

Great Britain.—Under the old-age pension act of Aug. 1, 1908, every person over seventy years of age who is and has for twenty years been a British subject resident in the United Kingdom, and whose yearly means do not exceed £31 10s. is entitled to a pension, provided he has not received poor relief since Jan. 1, 1908, has not through habitual idleness failed to maintain himself and his dependents, is not a lunatic in an asylum, and has not been a convict in prison during the preceding ten years. For every borough and urban district with a census population of at least 20,000, and for every county (excluding borough and district areas), a local pension committee is appointed by the borough, district, or county council. Claims are made for pensions through the local post offices, every postmaster being required to give information and make the proceedings as easy as possible for the claimant. The claim is transmitted to the pension officer and, on his report to the committee, that body may disallow the claim (in which case an appeal lies to the local government board), or may allow it and fix the rate of pension. The weekly amount of the pension is 5s. if the yearly means of the pensioner do not exceed £21 4s.; if the yearly means exceed £21, but do not exceed £23 12s. 6d., and so on, the weekly pension decreasing by 1s. for every £2 12s. 6d., by which the limit of the yearly means is increased. On Sept. 30, 1909, there were 682,768 persons on the pension roll in the United Kingdom, and the total amount paid in pensions from Jan. 1, 1909, was £6,063,658. It is estimated that the cost will be between £8,000,000 and £9,000,000 annually.

New South Wales.—In New South Wales the old-age pension law grants (subject to conditions as to birth, residence, and character) a pension of £26 a year to every person over sixty-five years of age, or over sixty if incapacitated by infirmity or injury from earning a living. The amount of the pension is diminished by one pound for every pound of income which the pensioner receives from other sources, and by one pound for every £15 of property the pensioner possesses. In the year 1908–09 25,824 pensioners received £602,208, the cost of pension administration being £25,141. Since July 1, 1909, old-age pensions have been paid throughout the commonwealth by the Federal Government. The state act will be repealed. There are also old-age pension laws in Queensland and Victoria.

New Zealand.—The joint annual income of a married couple in receipt of pensions must not exceed £90 (including pensions). Total pensions on March 31, 1909, 14,396, representing a yearly payment of £353,343, the average pension being £24 10s. 10d.

COÖPERATIVE AND BENEFIT SOCIETIES

Coöperative Societies.—Coöperation is not much in vogue among the wage-earning class of the United States—in strong contrast with the enormous success of the coöperative movement, both wholesale and retail, in Great Britain. The following were the most important coöperative societies organized during the year:

A coöperative wire-fence factory was established in Sycamore, Ill., under the name of "Sycamore Wire Fence Company." The factory is capable of producing 2,400 rods of fence wire in ten hours. There are more than 100 stockholders in this factory.

A coöperative store was established in Thompsonville, Mass.

At Freeport, Me., the employees of a shoe factory owned by A. W. Shaw and J. W. Amick, which has been running for twenty years, accepted the offer of their employers for the coöperative organization of the plant. They agreed to buy the preferred stock, amounting to $200,000, while the former owners retain the common stock, amounting to $100,000. The factory employs about 350 men, and the payroll amounts to $3,500 a week.

Benefits.—The benefits paid by seventy-four international unions affiliated with the American Federation of Labor during the year ending Aug. 31, 1910, amounted to $2,441,074, of which $1,320,664 were death benefits, $53,492 were members' wives' death benefits, $719,165 were sick benefits, $42,999 were traveling benefits, $6,945 were total insurance, and $197,808 were unemployed benefits. Out of this number of international unions, four paid no death benefits, forty-six paid no sick benefits, sixty-three paid no members' wives' death benefits and no unemployed benefits, sixty-eight paid no traveling benefits, and sixty-nine paid no tool-insurance benefits. The largest benefits were paid by the Cigarmakers' Union, to the amount of $533,000, followed by the International Brotherhood of Carpenters with a sum total of $373,557, and the Molders' Union with $193,996 of paid benefits.

The largest death benefits were paid by the International Brotherhood of Carpenters, to the amount of $250,001. It is followed by the Cigarmakers' Union with $226,000, by the Switchmen's Union with $128,550, and by the Painters' Union with $86,249 of death benefits. The largest members' wives' death benefits were paid by the International Brotherhood of Carpenters, to the amount of $33,550, followed by the Cigarmakers' Union with $4,800 of paid members' wives' death benefits. The largest sick benefits were paid by the Cigarmakers' Union, of $186,000; the Molders' Union, $135,464; the International Brotherhood of Carpenters,

$90,000; and the Boot and Shoe Makers' Union, $69,522, of sick benefits. The largest traveling benefits were paid by the Cigarmakers' Union, to the amount of $41,000; the Tunnel and Subway Constructors' Union, $1,500. The largest tool-insurance benefits were paid by the Amalgamated Carpenters' Union, amounting to $4,158; the Patternmakers' Union, $2,625. The largest unemployed benefits were paid by the Cigarmakers' Union, $76,000; the Glass Bottle Blowers' Union, $40,000; and the Amalgamated Carpenters' Union, $31,810.

LABOR LEGISLATION OF 1910

Irene Osgood Andrews, assistant secretary of the American Association for Labor Legislation, has prepared an analysis of the labor laws enacted by the states holding legislative sessions in 1910 and including Federal legislation, which is epitomized below.

Mrs. Andrews alludes to the insufficient attention thus far given to the subject of administration of labor law in this country, and says that it is now generally agreed that until the machinery for law enforcement is worked out on a more scientific basis, labor legislation will continue to be lacking in effectiveness. She cites the fact that in Massachusetts a commission of five has been appointed to study factory inspection as administered by the district police and state board of health. The object is to discover overlapping of powers, or absence of proper inspection, and to recommend improvements. A report must be made by Jan., 1911.

Illinois.—The governor is authorized to appoint a committee of twelve citizens, representing employers and employees, to study industrial accidents and methods of compensation.

The governor is required to appoint a commission of seven men to establish three mine rescue stations. Supervision of stations is under one general manager, and a salaried superintendent with assistants for each station. Seventy-five thousand dollars is appropriated for expenses to July 1, 1911. Coal mines must be supplied with water carried by well defined pipe and hose connections which shall extend to all parts of the mine; with automatic sprinklers, pails, and barrels of a given size; and with chemical fire-extinguishers of a required standard.

The Illinois commission on occupational diseases is now making investigations, and its work should be a valuable aid in establishing scientific standards according to hazards involved. A bill to prohibit poisonous phosphorus matches was introduced in Congress.

The important event of the year affecting woman's work was the Illinois Supreme Court decision upholding the constitutionality of the ten-hour law in that State.

Kentucky.—The chief inspector of mines and his five assistants are to be provided with six sets of life-saving apparatus, consisting of oxygen helmets and accessory equipments such as tanks, pumps, and potash cartridges. Four thousand dollars is appropriated for necessary expenses.

"To require or permit" laborers or mechanics to work more than eight hours a day on public works, except "in case of extraordinary emergency" is punishable by a maximum fine of $500 or three months imprisonment, or both.

Work in stores, offices, hotels, restaurants, and apartment houses, and the transmission of messages are added to the employments in which working papers are required for children between fourteen and sixteen. The granting of certificates by school superintendents is more adequately guarded.

Maryland.—A relief fund for injured employees in coal and clay mines in Alleghany and Garrett counties is created by a tax of twenty-seven cents per employee per month, and an equal amount from the employer per month for each employee. Compensation is provided for specified accidents, as, for example, the loss of both hands at the wrist joints, $750; one hand, $375; entire sight of both eyes, $750; one eye, $375; and in addition, $6 a week for twenty-six weeks. Injuries resulting in death within one year or death due to mine gases are compensated by $1,500. Substantial proof is required that the injury or death was due to the employment and a detailed method of procedure and administration is outlined. Money is deposited with the county treasurer and the fund is administered by the county board of commissioners.

Children under fourteen must not be employed in messenger service, and children under sixteen cannot be employed between 8 P.M. and 8 A.M. No minor may deliver or receive messages at any house of ill repute.

The label recognized by the International Typographical Union is now required on all public printing.

Massachusetts.—The governor is authorized to appoint a commission of five citizens to study the subject of employers' liability and to draft a bill for the compensation of injured employees.

In case of suit to recover damages, an amendment provides that, if the injured person dies within the time required for giving notice, his executor or administrator may give such notice within thirty days after appointment.

Weaving and spinning departments of textile factories, where water is used for humidifying, must be equipped with at least one set of standardized wet and dry bulb thermometers. These must be read and recorded three times a day and must conform to an established standard percentage of relative humidity. Water used for humidifying must not be dangerous to the health of employees.

Children between fourteen and sixteen who apply for working papers, must first be examined by an appointed physician as to physical fitness for work. The state board of health may prohibit the employment of children under eighteen in certain occupations determined to be injurious to the health of young persons.

Legislation was enacted affecting the old-age pensions of veterans in public service, police officers, and members of the fire department. Employers and employees are authorized to form coöperative pension or annuity systems to which each party shall contribute, and which shall be approved by the state insurance commissioner.

If an employer advertises for help, when labor disturbances exist in his establishment, he must explicitly mention that fact. The act forbidding the enticing of seamen from their ships is repealed.

A commission of three is created to study the administration and effectiveness of the laws concerning all kinds of employment agencies, and to advise in regard to supplying farm labor throughout the State. The report must be made by Jan. 11, 1911.

Mississippi.—Contributory negligence on the part of an employee shall not prevent recovery, but the jury must adjust damages in proportion to that negligence.

New Jersey.—The governor is authorized to appoint a commission consisting of two representatives of labor, two employers, one senator, and one representative, to report a bill to the 1911 session of the legislature.

In a liability action against a steam railroad company for injuries or death occurring at a crossing where the usual safety devices are not installed, the jury shall decide whether the injured had exercised due and reasonable care under existing conditions.

Children under fifteen are prohibited from working in the manufacture of any goods between 6 P.M. and 6 A.M. After July 4, 1911, the law applies to children under sixteen years of age.

New Jersey has also amended and supplemented her laws providing pensions for the paid fire and police departments (including dependents), veterans in public service, and prison employees.

New York.—An additional appropriation of $20,000 is voted for the use of the commission on employers' liability and unemployment, appointed in 1909.

The compulsory workmen's compensation law applies to injuries received in the following employments: (1) The erection or demolition of any bridge or building in which iron or steel framework is involved; (2) the operation of elevators, derricks, or hoisting apparatus used in or on such bridge or building; (3) work on scaffolds of any kind; (4) construction of tunnels and subways; (5) all work carried on under compressed air; (6)

construction, operation, and repair of electrical wires or apparatus; (7) all work necessitating proximity to gunpowder, blasting powder, or dynamite; (8) the operation of locomotives, motors or cars propelled by steam, electricity or gravity, and the construction or repair of railroad tracks. The law provides for compensation by the employer, regardless of fault, for all accidents, which are due to "the negligence of employers, agents, or employees, or by the necessary risk or danger of the employment or one inherent in the nature thereof." The compensation provided in case of death is four years' wages, but must not exceed $3,000. In case of total or partial disability the injured man may receive, for a maximum period of eight years, fifty per cent of his average weekly earnings, but not more than $10 a week, payable weekly, during disability. The injured person must decide at the time of bringing suit whether he will act under the compensation law or under the existing liability law, and his decision is final. [The constitutionality of the New York workman's act, which is based upon the workman's compensation act of England, is contested in a suit brought by an employee of the South Buffalo Railway Company to recover damages, on the ground that it deprives the corporation of property without due process of law, that it denies the right of trial by jury, and that it limits the amount recoverable in actions brought to recover damages for injuries causing death. This contention has been overruled by Judge Cuthbert W. Pound, who holds that the Legislature may make those who employ workmen in dangerous callings insurers, to some extent, of the safety of such workmen. "The common law imposed upon the employee entire responsibility for injuries arising out of the necessary risks or dangers of the employment. The new statute merely shifts such liability in part upon the employer." The case will be carried to the Court of Appeals, and perhaps to the Supreme Court of the United States.]

Compensation is provided for all accidents in ordinary occupations not included in the compulsory bill, but this is subject to agreement between employer and employee. In addition to this elective principle the liability of the employer is increased by modifying the assumption of risk run, and by placing upon the employer the burden of proving contributory negligence. The law modifies the fellow servant rule by making employers liable for the negligence of employees intrusted with any superintendence or authority to direct, control, or command any other employee.

A new section of the law, relating to the reporting of accidents, applies to building, construction, excavating, and engineering works. Two amended sections relate to mines or quarries, to tunnel work, and to factories. These laws require accidents to be recorded and reported within forty-eight hours "in such form as may be required by the commissioner of labor."

The commissioner of labor may order the removal of any stationary metal bars, grating or wire-mesh, from doors, windows or other openings of factories, unless such obstructions, in his opinion, can be easily and quickly taken down.

"All grinding, polishing or buffing wheels" used in the manufacture of articles of the baser metals must be equipped with "proper hoods and pipes" and connected with exhaust fans of sufficient capacity and power to remove all matter thrown off in the course of their use. Fans must be kept running constantly while such machinery is in use. Wet grinding is excepted, and other exceptions may be made at the discretion of the commissioner of labor. Factories must be supplied with pure drinking water; wash rooms with sinks and waste service must be maintained. Where females are employed, dressing or emergency rooms having solid partitions and with at least one window opening to the outer air, must be provided.

The employment of persons under twenty-one as messengers between 10 P.M. and 5 A.M. is forbidden. Children under sixteen are forbidden to work in bowling alleys, or as ushers, checkers, or program boys in places of amusement after 7 P.M.; the 7 P.M. closing hour for children under sixteen is extended to the entire State; the unlimited hours of work for persons sixteen or over are now restricted to the seven days preceding Dec. 25th; employees working after seven at night must be allowed twenty minutes for lunch between 5 P.M. and 7 P.M. Work on drill presses, metal or paper cutting machines, and corner staying machines in paper box factories, is added to the list of employments prohibited to children under sixteen.

Laws were also passed affecting the welfare of aliens in connection with the selling of transportation tickets to or from foreign countries, and in connection with private banking, with notaries public, and with private employment bureaus.

A Bureau of Industries and Immigration is established within the state department of labor. The bureau has power to investigate the demand for and possible supply of alien labor, to inspect all labor camps, to ascertain the conditions of employment, and to aid in the best placement of such labor.

The law limiting the hours of labor of drug clerks to seventy per week (formerly applicable only to cities of one million or more population) is extended to include all cities of the first class.

Employment offices for industrial laborers must register with the commissioner of labor, and are subject to his inspection.

Ohio.—The governor is directed to appoint a commission of five electors, two representing employers, two laborers, and one an attorney-at-law, to report bills to the next legislature, on the subject of compensation for industrial accidents.

All frogs, switches, and crossings must be filled, blocked or adjusted with metallic appliances so that the feet of employees and others will not be caught in angles. Safety devices are subject to the approval of the state railroad commission. Railroads operating wholly or partly within the State must require every three months, a thorough examination of locomotive boilers, by inspectors appointed by the state railroad commission. Caboose cars on roads operating within the State must be provided with doors at each end, and with outside platforms not less than twenty-four inches wide, having guard rails, grab irons, and steps with rods and guards at each end and back.

Age and school certificates for children under sixteen must be issued by the school authorities and a full previous school year with a fifth-grade test is required. Certificates cannot be issued unless the employer agrees to employ the child legally and to return the certificate to the school authority within two days after the child stops work. Children must attend school for full time when not employed. The employment of boys under eighteen as messengers for telephone, telegraph, or messenger companies between 9 P.M. and 6 A.M. is forbidden.

"Employers' negligence" includes the negligence of his agents and is assumed to exist when a defective condition is found which, with ordinary care, could have been discovered and prevented. The fellow-servant defense shall not hold where the injury was due in any way to inadequate rules for safety, to unsafe machinery, to a negligent agent or to the careless act of a fellow servant while obeying such agent. If the employer has failed to comply with the law respecting safeguards, the assumption of risk defense shall not hold. An injured employee or his representative is entitled to recover damages from a person insuring his employer.

Rhode Island. — By the amended law working papers must certify that the child is able to read at sight and write legibly simple sentences in English. Children under sixteen are no longer permitted to work in mercantile establishments on Saturday evenings and for four evenings preceding Christmas.

South Carolina.—Counterfeiting or imitating the label of any association or union of workingmen is subject to a maximum penalty of $100 or three months' imprisonment.

Virginia. — Caboose cars on railroads operating within the State must now be equipped with doors and platforms at each end, guard rails, grab irons, proper steps and, on freight trains, suitable cupolas. Logging or lumber trains are exempt.

Factories employing five or more persons, and other establishments or offices employing women or two or more children under eighteen, must be provided with a "sufficient number" of closets having a "reasonable access." These must be separate and designated where two or more males and females are employed together.

Mercantile establishments must provide at least one chair, stool or other suitable seat for every three females employed, such seats to be used so far as is necessary for the preservation of health.

When private employment agencies fail to provide positions within a specified or reasonable time they must return to the applicant all fees received except a filing fee of $1.

United States.—A commission of six men is appointed to study the subject of employers' liability and compensation for accidents to workmen engaged in interstate commerce. A report must be made by Dec., 1911.

The employers' liability act is amended to permit damage suits for accidents occurring on interstate roads to be brought at the residence of the injured and in the state courts or United State circuit courts.

A bureau of mines is established within the Department of the Interior.

By the passage of an amendment of the naval appropriation bill, the eight-hour day is established in construction work on United States battleships, colliers and revenue cutters.

It is interesting to note that the National Association of Manufacturers, among the members of which are included the largest industrial corporations in the United States, has recently taken up the questions of the prevention of accidents and industrial indemnity insurance, and has sent a commission abroad to study methods and practices in Great Britain and Europe. Special attention will be given to the museums of safety devices located in Berlin, Munich, and The Hague. The prevention of accidents will form one of the most important subjects to be studied. The commission believes that fully fifty per cent of industrial accidents are preventable, and that the scientific and practical application of safety appliances is of the utmost importance, not only from a humanitarian point of view, but also because of national, civic, and individual economy. (See also V, *Law and Jurisprudence;* XX, *Manufactures.*)

LABOR ORGANIZATIONS

National Labor Organizations.—Sept. 30, 1910, there were affiliated with the American Federation of Labor 120 international unions, 39 state federations, 632 city central bodies, 431 local trade-unions, and 216 Federal labor unions. During the fiscal year ending Sept. 30, 1910, the American Federation of Labor issued 334 certificates of affiliation as follows: 2 to international unions, 1 to a state federation, 83 to city central bodies, 152 to local trade-unions, and 96 to Federal labor unions. The average paid-up membership of the organizations affiliated with the federation for the same year was 1,562,112, an increase of 79,090 over 1909. The membership paid and reported for the month of Sept. was 1,644,444. Adding to this number 100,000 members, the approximate membership of the various organizations for whom per capita tax has not been paid for Sept. because of strikes, the organizations affiliated to the federation have a grand total of 1,744,444 members.

The receipts of the federation for the twelve months ending Sept. 30, 1910, were $360,774, the expenditures $177,859, and the balance on hand at the close of this year was $182,914.

There exist at present four departments forming parts of the American Federation of Labor: the building trades department, the metal trades department, the railroad employees' department, and the union-label trades department. The building trades department was organized at the headquarters of the federation, Feb. 8, 1910. It is composed of twenty international unions. Two state charters and 181 local charters have been granted since the time of organization, of which 170 are in good standing. The revenues of the department from the time of organization to the fiscal year, Aug. 31, 1910, were $43,980, as against a total disbursement of $40,157. This department succeeded in bringing about mutual agreement in seven jurisdictional disputes between international unions composing it, and it rendered decision in five jurisdictional disputes in which the parties concerned failed to reach a mutual agreement.

The metal trades department has affiliated with it twelve international unions representing approximately a membership of 230,000. The railroad employees' department has ten affiliated international unions, and the union-label trades department has affiliated thirty-nine international unions with a membership of about 432,000.

During 1910 a number of international organizations have consolidated. The two unions in the paper-making industry whose dissensions caused the loss of a strike several years ago have combined. The two national unions of car workers have amalgamated after a struggle of five or six years. The two national organizations of the boilermakers have also combined. The United Brotherhood of Carpenters consolidated with the Amalgamated Woodworkers' Union. The United Rats of America amalgamated with the Actors' National Union. The Western Federation of Miners, which long stood outside of the American Federation of Labor, has decided to affiliate with the federation, and to form a mining department in conjunction with the United Mine Workers. The admission of the Western Federation of Miners was protested by the International Association of Machinists on the ground that the Western Federation claimed jurisdiction over the machinists working in and around the mines. An agreement was apparently reached when representatives of the machinists and of the Western Federation of Miners met in Indianapolis, and agreed that the federation shall have jurisdiction over all machinists employed in the mines except in localities where branches of the Machinists' Union are in existence. Difficulties have arisen over the interpretation of the agreement, and the situation still stands as it was. The situation in the Electrical Workers' Union, which is divided in two hostile factions, also remains unchanged.

The thirtieth annual convention of the American Confederation of Labor was held in St. Louis, Nov. 14th–28th. Samuel Gompers and all the other officers of the federation were reëlected without opposition. Atlanta, Ga., was selected as the place for the 1911 convention.

The International Association for Labor Legislation.—The biennial meeting of the International Association for Labor Legislation, which was founded in 1900, was held in Lugano, Switzerland, Sept. 26–28, 1910. There were about 120 delegates present, representing fifteen national sections and many of the governments. The United States was represented by its commissioner of labor, Dr. Charles P. Neill, while the American Association for Labor Legislation was represented by its president, Prof. Henry W. Farnam, its secretaries, Dr. and Mrs. J. B. Andrews, and by Dr. Lee K. Frankel and Dr. Helen L. Sumner. In accordance with its custom, the meeting devoted itself strictly to business. It divided itself into five commissions, and each commission met separately, discussed the topics assigned to it, and framed resolutions which it then reported to a general meeting of the delegates.

The resolutions, which in the English translation cover fifteen pages, relate to the administration of labor laws, child labor, the night work of young persons, the maximum working day, workingmen's holidays, home work, industrial poisons, work in compressed air, the protection of railroad servants, the prevention of accidents, and workingmen's insurance.

The association, which has already been the means of securing international treaties prohibiting the night work of women in certain industries and the use of poisonous phosphorus in the manufacture of matches, held that the time has now come to deal in the same manner with the maximum working day for women and young persons. It accordingly voted to appoint a commission to take such steps as might be necessary to bring about treaties on these subjects. It also voted to take the necessary steps to invite the governments to attend an international conference on the subject of the night work of young persons. The most radical measure was perhaps the recommendation of the establishment of wage boards like those provided for in the British trade boards act for fixing minimum rates of wages for home workers in certain industries, and certain districts. Elaborate principles were adopted for the regulation of hygienic conditions in the ceramic industry, in printing works, and in type foundries, with the object of preventing lead poisoning; and one resolution stated that the time has come to prohibit the use of lead paints in interior work.

The resolutions which have special reference to the United States are the following:

> The delegates' meeting expresses to the government of the United States its hearty thanks for the increase of its appropriation.
>
> The association requests the American section to continue its efforts to secure the passage in the several states of the Union of suitable laws for insurance against sickness and accident which shall not discriminate against alien workers, and thus carry out Resolution IX adopted at Geneva, and Resolution X adopted at Lucerne, and it thanks this section for the initiative which it has taken in this question of the protection of immigrants.

The association voted to continue in office those who have directed its affairs from the beginning, and elected as president, H. Scherrer, of St. Gall, and as secretary, Prof. Stephan Bauer, of Basel.

The Paris Conference on Unemployment.—An international conference on unemployment was held in Paris, Sept. 18–21, 1910. As the name implies, this was a conference rather than a congress. Those who attended went by invitation of the committee of initiative, of which Senator Leon Bourgeois was chairman, and Dr. Max Lazard, the secretary. Its purpose was primarily to discuss the desirability of forming a permanent organization among those interested in the subject of unemployment, and it resulted in the formal adoption of the statutes of an international association.

The conference was attended by representatives from some fifteen countries, several of whom appeared on behalf of their governments. The topics discussed were carefully limited in advance to four—viz., the desirability of forming a permanent organization, statistics of unemployment, employment bureaus, and insurance against unemployment, but even in this circumscribed field, a large number of valuable papers were presented in print, and many of them read and discussed. The statutes adopted provide for the formation of national sections which elect a general committee, each section being entitled to a representation roughly proportional to its membership. The committee in turn chose the officers. As a provisional arrangement, it was decided that the first committee should be chosen by the Paris conference, and the number of members from each country was determined according to a scale which was supposed to represent fairly the number of persons from each country which had subscribed to the conference. The committee thus formed, then organized by choosing as president Senator Leon Bourgeois, of France, and as general secretary Louis Varlez, of Ghent, Belgium. The headquarters will be in Ghent. It is expected that the general secretary will keep in touch with the movement against unemployment in different countries, and that international conferences will be held periodically, say once in three years. The members chosen to represent the United States provisionally are Prof. E. T. Devine, of Columbia University, Dr. Lee K. Frankel, of New York, and Prof. Henry W. Farnam, of Yale University. Besides the American members of the committee there were present at the Paris conference, Dr. Helen L. Sumner, Dr. and Mrs. Andrews, of the American Association for Labor Legislation, and Mr. W. M. Leiserson, who presented a report on measures for combating unemployment in the United States. The American Association for Labor Legislation is to take charge of the organization of the American section, which in turn will appoint permanent members of the committee.

International Conference on Social Insurance.—The eighth international conference on social insurance was held at The Hague in Sept., 1910.

Two topics were under consideration: (1) State contributions to the cost of old-age pensions, and (2) medical aid in social insurance. The conference was composed largely of government officials, but in addition there were representatives of manufacturers, insurance companies, economists, physicians, actuaries, and labor organizations.

The first international conference was held at Paris in 1889, when the question of industrial accidents was considered. Since then seven meetings have taken place. The present form of organization consists of a permanent international committee of social insurances, with subcommittees in various countries. The membership is about 1,500, representing thirty different countries.

The committee publishes a quarterly bulletin for distribution to members. It is proposed to hold conferences every two years, although the next meeting will not be held until 1913, and will take place in the United States. Special importance will be given to every third meeting, which will be called as a congress.

International Conference on Occupational Diseases.—The second international conference on occupational diseases (*Maladies professionelles*) was held at Brussels, Sept., 1910. Physicians, medical inspectors of factories, chemists, and economists, who represented the larger industrial countries, discussed such subjects as lead, mercury, and other industrial poisons; anthrax, ankylostomiasis, caisson disease, and other diseases peculiar to certain occupations.

The first international congress was held at Milan in 1908, and the third will be held in 1912 at Vienna. Various countries have local representatives of the international body, and members receive the publications.

BUREAUS OF LABOR

The first bureau of labor created by law in the United States, and probably the first in the world, was established in Massachusetts in 1867, under the title of Bureau of Statistics of Labor. Somewhat similar bureaus, under the same or different titles, now exist in thirty-four states of the Union. There is in addition a National Bureau of Labor, established in 1888, and a bureau of labor in the Philippine Islands was organized in 1900. The following is a list of these state labor bureaus, with a statement of the functions and duties appertaining to each:

CALIFORNIA

Bureau of Labor Statistics, organized 1883. J. D. MACKENZIE, commissioner, San Francisco.

Statistics of labor and industries, marriage, divorce, and crime; statistics regarding the Japanese in the state; enforcement of laws relating to child labor, private employment offices, and factories.

COLORADO

Bureau of Labor Statistics, organized 1887. EDWIN V. BRAKE, deputy commissioner, Denver. (The Secretary of State is labor commissioner, *ex-officio*, but the deputy commissioner is the executive officer of the bureau.)

Statistics of labor; inspection of factories, and the administration of free employment offices; supervision of private employment agencies; arbitration of labor differences.

CONNECTICUT

Bureau of Labor Statistics, organized 1873. WILLIAM H. SCOVILLE, commissioner, Hartford.

Statistics of labor and industries; the collection and publication of information concerning tenement houses erected in the various cities to which the tenement house laws apply; the employment of special agents to instruct alien laborers as to their rights of contract under the laws of the state; the administration of free employment offices. The factory inspection department and the board of mediation and arbitration are both entirely separate from the bureau of statistics.

IDAHO

Bureau of Immigration, Labor, and Statistics, organized 1899. JOSEPH P. FALLON, commissioner, Boise City.

Statistics of agriculture, manufactures, and labor; inspection of factories; encouragement of immigration through the publication and distribution of literature.

ILLINOIS

Bureau of Labor Statistics, organized 1879. DAVID ROSS, secretary, Springfield. (The law in this state provides for the appointment, by the governor, of a commission of five members serving a term of two years; the commission elects a secretary who is not a member of the commission.)

Statistics of labor and manufactures; administration of free employment offices; statistics relating to industrial accidents and the enforcement of all laws relating to the same. Factory inspection is under a separate department.

INDIANA

Bureau of Statistics, organized 1879. J. L. PEETZ, chief, Indianapolis.

Statistics of agriculture, manufactures, mining, commerce, education, labor, social, and sanitary conditions; births, marriages, and deaths; administration of free employment offices, and enforcement of laws regulating private employment offices. The department of factory inspection and the labor commission, which acts as a board of mediation and arbitration in labor disputes, are both entirely separate from the bureau of statistics.

IOWA

Bureau of Labor Statistics, organized 1884. EDWIN W. VAN DUYN, commissioner, Des Moines.

Statistics of labor, manufactures, and industrial accidents; enforcement of public buildings and factory inspection laws, child labor laws, and the law regulating private employment offices.

KANSAS

Bureau of Labor and Industry, organized 1885 W. L. A. JOHNSON, commissioner, Topeka.

Statistics of labor and manufactures; enforcement of all laws regulating the employment of women and children and all laws for the protection of the health, lives, and limbs of operators in workshops, and factories, on railroads, and other places, and all laws enacted for the protection of the working classes now in force or that may hereafter be enacted. The commissioner is also required to investigate strikes and labor difficulties and to act as mediator.

KENTUCKY

Bureau of Agriculture, Labor, and Statistics, organized 1876. M. C. RANKIN, commissioner, Frankfort.

The promotion of agriculture, horticulture, and manufactures; statistics of labor; and inspection of factories.

LOUISIANA

Bureau of Statistics of Labor, organized 1900. JAMES BYRNES, commissioner, New Orleans.

Statistics of labor and manufactures. Inspection of factories is enforced by city and parish inspectors.

MAINE

Bureau of Industrial and Labor Statistics, organized 1887. THOMAS J. LYONS, commissioner, Augusta.

Statistics of labor and manufactures; information relative to resources and attractions of the state; information concerning deposits of valuable and useful minerals; investigation of causes of industrial accidents and differences. The factory inspection department is separate and distinct from the bureau of industrial and labor statistics, except that the inspector shall assist in the collection of statistics and other information which may be required for the use of the bureau of industrial and labor statistics.

MARYLAND

Bureau of Statistics and Information, organized 1884. **Charles J. Fox**, chief, Baltimore.

Statistics of labor; the mediation and arbitration of labor disputes; statistics of agriculture; statistics of mines, quarries, manufactures, railroads, shipping, and commerce; the maintenance of free employment offices; the enforcement of factory inspection and child labor laws; the maintenance of a bureau of general information.

MASSACHUSETTS

Bureau of Statistics, organized 1869. **Charles F. Gettemy**, director, Boston.

Statistics of labor; statistics of manufactures; financial statistics of cities and towns; the administration of free employment offices; the taking of the census. The inspection of factories and workshops and the mediation of arbitration and industrial disputes are both under separate departments from the bureau of statistics.

MICHIGAN

Bureau of Labor and Industrial Statistics, organized 1883. **Richard H. Fletcher**, commissioner, Lansing.

Statistics of labor and industry; the enforcement of factory inspection, mining inspection, and boat inspection laws; the establishment and control of free employment offices.

MINNESOTA

Bureau of Labor, Industries, and Commerce, organized 1887. **W. E. McEwen**, commissioner, St. Paul.

Statistics of labor, industry, commerce, and agriculture; enforcement of all laws relating to the employment of minors and women; inspection of factories, mills, workshops, hotels, restaurants, and engineering works; enforcement of compulsory education and truancy laws; administration of free employment offices.

MISSOURI

Bureau of Labor Statistics, organized 1879. **C. J. A. Hiller**, commissioner, Jefferson City.

Statistics of labor and industry; maintenance of free employment offices; licensing and supervision of private employment agencies; enforcement of wage laws. Inspection of factories and mines are each under separate departments and neither has any connection with the bureau of labor statistics.

MONTANA

Bureau of Agriculture, Labor, and Industry, organized 1893. **J. H. Hall**, commissioner, Helena.

Statistics of agriculture, manufactures, and labor. The inspection of mines is under a separate bureau.

NEBRASKA

Bureau of Labor and Industrial Statistics, organized 1887. **Will M. Maupin**, deputy commissioner, Lincoln. (By law the governor is made labor commissioner, but he appoints the deputy commissioner who is the executive officer of the bureau.)

The inspection of hotels, factories, and public buildings; administration of free employment offices; enforcement of the fire escape law, child labor law, the female employment law, and compulsory education law; estimates of crops; crop and live stock statistics; freight and express shipment statistics; mortgage statistics; manufacturing and wage statistics, and the publication of all agricultural statistics. The deputy commissioner also assists the county and city superintendents in enforcing the juvenile delinquency law.

NEW HAMPSHIRE

Bureau of Labor, organized 1893. **Lysander H. Carroll**, commissioner, Concord.

Statistics of labor and industry.

NEW JERSEY

Bureau of Statistics of Labor and Industry, organized 1878. **W. C. Garrison**, chief, Trenton.

Statistics of labor and industry. Fostering of productive industry of the state, with conditions favorable to employer and employee. The inspection of factories is under a separate department called the department of labor, and has no connection with the bureau of statistics.

NEW YORK

Department of Labor, organized 1883. JOHN WILLIAMS, commissioner, Albany.

Department of labor is divided into four bureaus: Bureau of factory inspection (which includes the inspection of factories, mines, and quarries, and the construction of tunnels and foundations where work is conducted under compressed air pressure); the bureau of statistics of labor; the bureau of mediation and arbitration; and the bureau of mercantile inspection.

NORTH CAROLINA

Bureau of Labor and Printing, organized 1887. M. L. SHIPMAN, commissioner, Raleigh.

Statistics of labor and industry, farm lands, timber lands, and water powers. The commissioner also exercises a general supervision over the state printing. The state has no provision for factory inspection.

NORTH DAKOTA

Department of Agriculture and Labor, organized 1889. W. C. GILBREATH, commissioner, Bismarck.

Statistics of labor and industry; the record of stock brands; supervision of creameries and dairies; the exploitation of the resources of the state; and the publishing of literature thereon.

OHIO

Bureau of Labor Statistics, organized 1877. C. H. WIRMEL, commissioner, Columbus.

Statistics of labor and industry; administration of all free employment offices, and the licensing of private employment agencies.

OKLAHOMA

Department of Labor, organized 1907. CHARLES M. DOUGHERTY, commissioner, Guthrie.

Statistics of labor and industry; enforcement of all laws relating to labor in regard to transportation, mechanical, and manufacturing industries; the supervision of the work of free employment offices and inspection of factories; the licensing of private employment agencies, and the enforcement of all laws relating to the same. The commissioner is required to recommend to the governor the appointment of three of the six members of the State Board of Arbitration and Conciliation, and to act as chairman of that board.

OREGON

Bureau of Labor Statistics and Inspector of Factories and Workshops, organized 1903. O. P. HOFF, commissioner, Salem.

Statistics of labor and manufactures; enforcement of laws relating to the employment of women and children; all laws for the protection of the health, lives, and limbs of operators in workshops, factories, mills, and other places to which the factory inspection laws apply.

PENNSYLVANIA

Bureau of Industrial Statistics, organized 1871. J. L. ROCKEY, chief, Harrisburg.

Statistics of labor, industries, agriculture, mining, commerce, and other business interests of the state. The language of the act establishing the bureau is so broad that the chief feels justified in taking up work never before undertaken which he believes will be highly beneficial to the state. Inspection of factories and mines is under separate departments from the bureau of industrial statistics.

RHODE ISLAND

Bureau of Industrial Statistics, organized 1887. GEORGE H. WEBB, commissioner, Providence.

Statistics of labor and industry; the taking of the state and United States censuses. Factory inspection is under a separate department.

SOUTH CAROLINA

Department of Agriculture, Commerce and Industries, organized 1904. E. J. WATSON, commissioner, Columbia.

Statistics of agriculture, manufactures, cattle raising, and labor; the publication of a handbook containing information showing the nature and industrial resources and advantages of the state, dealing with soil, climate, raw, and manufactured products, agricultural and horticultural products, textile fabrics, manufacturing industries, mines and mining, native woods, means of transportation; cost of living, the market, and all material and social advantages for those seeking homes and investment in agricultural or manufacturing industries. The inspection of factories and enforcement of labor laws.

TEXAS

Bureau of Labor Statistics, organized 1909. JOSEPH S. MYERS, commissioner, Austin.

The law provides for a commissioner, factory inspector, and general clerk.

VIRGINIA

Bureau of Labor and Industrial Statistics, organized 1898. JAMES B. DOHERTY, commissioner, Richmond.

Statistics of labor and industry; the inspection of factories, workshops, and mines.

WASHINGTON

Bureau of Labor, organized 1897. CHARLES F. HUBBARD, commissioner, Olympia.

Statistics of labor and industry; the enforcement of all laws relating to the employment of women and children; all laws established for the protection of the health, lives, and limbs of operators in workshops, factories, mills, and mines, on railroads, and steamboats; all laws enacted for the protection of the working classes; all laws regulating and prescribing the qualifications of persons in trades and handicrafts. The commissioner is also charged with the administration of the navigation laws relating to the examination and licensing of vessels and persons, and carrying out the provisions of the arbitration laws.

WEST VIRGINIA

Bureau of Labor, organized 1889. I. V. BARTON, commissioner, Wheeling.

Statistics of labor and industry; the inspection of factories, workshops, and mercantile establishments; the administration of the free employment offices; enforcement of employee's protective laws.

WISCONSIN

Bureau of Labor and Industrial Statistics, organized 1883. J. D. BECK, commissioner, Madison.

Statistics of labor, manufactures, and the material resources of the state; investigation of all subjects relating to the welfare of the industrial classes and interests; regulation of safety and sanitation of factories and shops; powers of truant officer; the inspection of factories and bakeries; the administration of free employment offices.

UNITED STATES

United States Bureau of Labor, organized 1888. CHARLES P. NEIL, commissioner, Washington, D. C.

The general design and duties of the bureau are to acquire and diffuse among the people of the United States, useful information on subjects connected with labor, in the most general, comprehensive sense of that word, and especially upon its relation to capital, the hours of labor, and earnings of laboring men and women, and the means of promoting their material, social, intellectual, and moral prosperity.

PHILIPPINE ISLANDS

Bureau of Labor, organized 1909. —— ———, director, Manila.

XVI. LABOR AND LABOR LEGISLATION

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XVII. PREVENTION, CORRECTION, AND CHARITY *

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AGENCIES FOR PREVENTION

[An effort is made to show, in outline, the present status of social work in the fields indicated, to serve as a point of departure for the future discussion of yearly progress.]

It has long been recognized that measures for the relief of misery, the cure of insanity, and the punishment of crime are at best only palliative, and that prevention is the only effective means to check the growing tide of pauperism, vice, and crime; and it is gradually being discovered that preventive measures must go farther back than was formerly supposed. Such measures must reach the springs of heredity, the remote conditions of environment, the hidden sources of physical and moral disease. The recognition of this fact has led to diligent and scientific study of social questions by various agencies, some of which will be outlined.

Conferences.—1. The National Conference of Charities and Correction, organized in 1874, meets annually in different cities of the United States and Canada. Its discussions cover the entire field of charities, philanthropy, and correction, and are carried on in general sessions and section meetings. The conference adopts no platforms, but offers an open arena for the consideration of the problems of charity and correction, publishes its discussions, and leaves them to produce their own effects. The powerful influence of the conference upon the public and private agencies of the United States is universally admitted. The conference of 1910 was held in St. Louis; president, Miss Jane Addams, of Chicago; attendance about 1,200. The general secretary is Alexander Johnson, Fort Wayne, Ind. The published proceedings of the conference are the great source of information on charities and correction. Their contents are made available for reference by the *Guide to Study of Charities and Correction*, published in 1908.

2. State conferences of charities and correction have been organized in many states. They discuss similar subjects and follow like principles with the National Conference of Charities and Correction. The state conferences of Ohio, Indiana, and Massachusetts are especially active.

3. The National Conference on Backward, Truant, Dependent and Delinquent Children, meets annually at the same place with the National Conference of Charities and Correction. It brings together representatives of juvenile reformatories, orphan asylums, and other institutions for dependent children, representatives of child-helping societies, etc. It discusses the concrete problems of delinquent, dependent, and defective childhood.

4. Problems of prevention, correction, and charities are studied incidentally by numerous national and state organizations, such as the American Social Science Association, the Association of Medical Superintendents of Hospitals for the Insane, the National Mothers' Congress, the National Education Association, etc.

Preventive Societies.—The prevention of dependency, delinquency, and defectiveness is promoted by numerous societies organized for the purpose:

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* The account of the International Prison Congress is contributed by O. F. Lewis, Secretary of the Prison Association of New York.

1. **Societies for the prevention of vice, censorship of amusements, etc.**—The New York Society for the Prevention of Vice secures legislation against obscene and vicious publications, seizes and destroys printed material, and prosecutes offenders. Its agencies and branches extend throughout the country; secretary, Anthony Comstock. The voluntary committee for the censorship of moving pictures has secured the coöperation of the publishers of moving pictures, and succeeded in the suppression of vicious and suggestive productions. Local censorships are exercised over public libraries in many communities.

2. Direct preventive work is done by women's clubs, mothers' clubs, and parental societies. The Chicago Women's Club is a notable example of practical work. Through its agency, in coöperation with others, have originated the Chicago Juvenile Court, the Juvenile Court Committee, the Children's Hospital Society, and other effective preventive agencies.

3. The New York Society for the Prevention of Cruelty to Children was the original society of its class. The society has pursued a vigorous and aggressive policy, and has been instrumental in rescuing children by scores of thousands. Its leaders advocate the organization of societies for the exclusive work of preventing cruelty to children, and their example has been followed by many societies in the states of New York, Pennsylvania, and New Jersey.

In many cities the prevention of cruelty to children is associated with the prevention of cruelty to animals, and the two forms of work are carried on by a single organization. The advocates of this method claim that in the smaller cities, separate organizations cannot be maintained for economic reasons, and that the two forms of work can be effectively combined.

4. The prevention of infant mortality has recently appealed strongly to the public mind. A conference held in New Haven, Conn., in Nov., 1909, resulted in the organization of a permanent Society for the Study and Prevention of Infant Mortality, which has attacked the problem vigorously. A second conference was held in Baltimore in Nov., 1910. A third conference will be held in Washington, D. C., in Nov., 1911. The secretary of this society is Miss Gertrude B. Knipp, Baltimore, Md. Reliable statistics of infant mortality are lacking; but it is known that during the heated term, infant mortality in some cities sometimes runs above fifty per cent of the infants born. Statistics furnished by institutions for foundlings show infant mortality rates averaging above fifty per cent in some institutions, with an average in twenty-two institutions, for a series of years, amounting to 40.5 per cent.

Infant mortality is being attacked in the larger cities by societies organized to supply certified milk, to provide visiting nurses, and to organize infant clinics in conjunction with milk stations, where mothers receive expert instruction from physicians with reference to the feeding and care of children. It has been found that individual instruction of a mother with reference to the care of her own child is much more effective than a general lecture to a class of mothers in assembly.

Prevention of Disease.—Extraordinary progress is being made in the development of sanitariums, outdoor sleeping, outdoor work, etc., for tuberculous patients. This progress is largely due to the efforts of the National Society for the Prevention of Tuberculosis and local societies in different states and cities. (See XXVIII, *Medicine and Hygiene.*)

Within the past five years there have been organized a number of societies for the instruction of children in the problems of sex, in the proper care of their bodies, and also for the prevention of venereal disease. These societies are organized under the names of societies of social hygiene, etc. They are enlisting the coöperation of leading physicians and social students. They are taking up the subjects courageously, reasonably, and without false modesty, and are meeting with quick response from teachers and parents; they are rapidly extending.

Provident societies, provident loan societies, etc., for the encouragement of thrift are hopeful means of prevention. The poor are induced to accumulate money in advance for the purchase of fuel and other necessities.

Children and adults are persuaded to save money to be confided to an agent for deposit in a savings bank, and ultimately to establish savings accounts of their own. An important form of this kind of philanthropy is the establishment of loan banks to furnish temporary loans on chattels at moderate rates, in order to relieve the poor from the extortions of the pawnbroker and the chattel-mortgage lender. These loan banks, while philanthropic in their results, are not to be classed with charities, because they are administered on strict business principles, and are allowed to earn reasonable dividends for their investors—usually six per cent. An example of successful institutions of this class is the First Loan Bank of Chicago.

Child-helping Societies.—There are in the United States about 100 child-helping societies organized under the names of children's aid societies, children's home societies, kinderfreund societies, home bureaus, etc. All of these societies recognize the value of the family home as a refuge for dependent, neglected, and delinquent children, and practice to a greater or less degree the method of "placing out" children in family homes.

The original children's aid society is the New York Children's Aid Society, organized by Mr. Charles Loring Brace in 1853. It is also the largest, expending about $500,000 annually. It carries on a great variety of work, including lodging houses for newsboys and newsgirls, industrial schools for poor children, summer sanitariums for sick children, a temporary farm home for boys, a large placing-out agency, handling some 800 children yearly, a home for crippled children, etc. There is also a large Brooklyn Children's Aid Society, carrying on similar lines of work.

The Catholic Home Bureau of New York, organized in 1898, is a coöperative placing-out agency, serving twenty-four Catholic children's institutions. It finds selected homes for about 300 children yearly, maintaining a close supervision. The Catholic Children's Aid Society performs a similar office for ten or twelve Catholic orphan asylums in the State of New Jersey. The work is carried on under the direction of Rev. Francis Foy, of Nutley, N. J., by laymen employed at a living salary.

In the city of Boston there are four active child-helping societies: The Boston Children's Aid Society, the Boston Children's Friend Society, the Boston Children's Mission, and the Boston Society for the Care of Girls. These four societies work in close harmony, using the same blanks for recording the history of their wards and following the same general policy. Each of these societies formerly maintained a home for the care of children. All of these homes have been closed and both temporary and permanent care of children is provided in family homes, with or without payment of board, according to circumstances. All of these societies select foster homes and maintain a close supervision of their wards in such homes.

The policy of placing children in family homes, with or without payment of board, has long been pursued by the State of Massachusetts and the city of Boston, as well as by private societies. As a result of this policy the building of orphan asylums and children's homes in Massachusetts has practically ceased, and no less than thirteen such institutions have been closed within the past fifteen years.

The State of Pennsylvania has about thirty-five child-helping societies, of which the Pennsylvania Children's Aid Society is the largest, expending about $85,000 per year, and acting as agent for the public authorities in some twenty counties for the care of their dependent children. In western Pennsylvania, there are twenty-three county societies federated as the Western Pennsylvania Children's Aid Society, but operating independently. These twenty-three societies report more than 1,000 wards and care for 600 to 700 children yearly. They are unique from the fact that this large work is carried on entirely by volunteers, all of them women. The federation employs a secretary known as the "actuary," and the Allegheny County Society in Pittsburg employs a secretary. These are the only employees of the twenty-three societies.

Independent county societies exist in ten or twelve counties of Pennsylvania. Some of these societies maintain small receiving homes. Most of them, like the western Pennsylvania societies, are manned by volunteers.

The Pennsylvania Children's Home Society, with headquarters at Pittsburg, operates in different parts of the state. It maintains a receiving home with a capacity of about twenty children and places in family homes some twenty-five to thirty children yearly.

The National Children's Home Society is a federation of thirty children's home societies in the states of California, Colorado, Florida, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Montana, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Texas, Virginia, Washington, West Virginia, and Wisconsin. These societies cover also Arizona, Delaware, and Wyoming, auxiliary to neighboring states.

The usual plan of organization is a state superintendent with headquarters at the capital or metropolis of the state, assistant or district superintendents, covering sections of the state, local advisory boards of representative men and women in the important cities and towns (Iowa has 1,000 local advisory boards), a receiving home for the temporary care of a small number of children awaiting placement (Illinois, Washington, and Idaho have each two receiving homes). All of the children's home societies place children in family homes, as their principal work. Several have established "aid departments" and do a general work for neglected children. Several of the children's home societies, for example, the societies of Kentucky, Washington, South Dakota, and Idaho, exercise a predominant influence in all matters relating to the interests of neglected and dependent children.

The New York Children's Aid Society and the Oregon Boys' and Girls' Aid Society became associated with the National Children's Home Society after having been in existence for many years.

The National Children's Home Society exercises an oversight over the administration of the several state societies, each of which is independent.

The thirty children's home societies together place about 3,500 new children in family homes each year; they have under their care about 17,000 children; they expended last year about $500,000, and they have accumulated property to the value of about $900,000.

The Lutheran Kinderfreund Societies had their origin in Wisconsin. They have now fourteen organizations in the states of Wisconsin, Illinois, Minnesota, South Dakota, Nebraska, Kansas, Missouri, Michigan, Indiana, Ohio, and New York. The kinderfreund societies are still in the process of evolution. They have the advantage of the coöperation of the organized German Lutheran churches.

Juvenile court committees have been organized in a number of cities for the purpose of coöperation with the juvenile courts. These societies are operated to secure improved legislation, to raise money for the payment of probation officers where public funds are not provided, to establish juvenile detention homes instead of jail confinement for children, and to promote efficiency in the care of children placed on probation. The most efficient juvenile court society has been that of Chicago. The next in efficiency is that in Philadelphia.

Juvenile protective societies and similar organizations have been organized in connection with many juvenile courts for the purpose of promoting the welfare and reformation of children who became wards of the juvenile court. These societies have instituted plans for systematic efforts in behalf of such children, and have sought to enlist the coöperation of friendly individuals. The movement has been actively promoted by Hon. Ben. B. Lindsey, judge of the Denver Juvenile Court, and has been seconded by representatives of the different juvenile court societies.

The "big brother" and "big sister" movement is closely related to the work of the juvenile protective societies. It had its origin with the clerk of the children's court of the City of New York. It has taken organized form in the cities of Philadelphia and Milwaukee, and is spreading to other cities. The essence of the movement is to enlist the personal services of a young man or a young woman in behalf of a neglected boy or girl; the big brother or sister is to secure the confidence of the child, establish personal relations of friendship and good will, provide wholesome friendship, amusement, and employment, and to become a permanent factor for the betterment of the child's condition. The aim is to make the work practical and efficient rather than impulsive and sentimental. To this end the effort is to select stable and sensible people, and to keep them in touch with wise and experienced probation officers.

Social settlements stand in the first rank of preventive agencies because they bear directly upon the social life of the community. They operate directly to improve home conditions, family life, and sanitary surroundings. They put their neighbors in touch with physicians, visiting nurses, and philanthropic agencies. They offer opportunity for normal social life, wholesome amusement, industrial, literary, and artistic training. They promote the establishment of public playgrounds, boys' clubs, girls' clubs, social clubs, mothers' clubs, literary clubs, etc. They assist immigrant parents to accommodate themselves to a new social atmosphere for their children, and preserve in the children's minds a spirit of filial respect. They inculcate patriotism and civic spirit in the young. They set a standard of wholesome, simple living, and bring to bear upon the community the force of earnest altruistic men and women. They study scientifically and sympathetically the social problem of their vicinity. They inaugurate and promote social reforms, enlisting the coöperation of the very people who might otherwise be used as the tools of demagogues. They promote the establishment of juvenile courts and furnish probation officers and "big brothers." They stimulate industry, faithfulness, helpfulness, cheerfulness, and wholesome discontent.

Public Playgrounds. — The public playground movement, which had its inception in Chicago, has spread rapidly to all of the leading cities of the Union. The Playground Association of America, with headquarters at No. 1 Madison Avenue, New York, maintains an active propaganda for the extension of the playground system, and for its organization on the proper basis.

The playground may be established entirely through private initiative, like the first playground connected with Hull House, Chicago. It may be organized in connection with the public parks, and under the control of the public park authorities, as in Hartford, Conn. It may be organized under special boards of trustees or directors, with funds provided by the public treasury, as in Chicago and Washington.

The essential feature of the public playground is the furnishing of a suitable place of recreation for children and young people, where play can be so directed as to provide the maximum of wholesome exercise and recreation without overtaxing the body, and to give active physical employment to all of the children who participate, varying the apparatus and the sports to the different ages, strength, and tastes of the players.

It is essential that the playground shall be under an intelligent, trained director. It is also essential that it shall be under such supervision as will safeguard the children from any evil influence arising from promiscuous association. In practice comparatively little difficulty is experienced in this respect. In fact, the danger has been found so small that there has been liability sometimes of overlooking it. The play directors, police officers, employees of public refreshment stands, etc., must all be selected with reference to their absolute reliability in this regard.

The most highly developed system of public playgrounds in the United States is in Chicago. Information can be obtained by addressing the public playground commission, City Hall, Chicago, Ill.

Clubs for Boys and Girls.—The gang instinct which, undirected, becomes a source of mischief and vice, is capable of being used in exactly the opposite way. Boys' clubs and girls' clubs, wisely organized and directed, may utilize this instinct most beneficially. Large clubs for boys are maintained in the business districts of some cities—for example, the Boys' Club of New York, at 161 Avenue A, and the Chicago Boys' Club. There is a legitimate field for such clubs, because of the large number of boys who either live or work in the business districts; but it is generally agreed that the most useful clubs are the smaller clubs connected with Young Men's Christian Associations, churches, social settlements, public playgrounds, etc., where children are gathered in smaller groups and impressed by the personality of wise and sympathetic adult leaders. The need of adult leadership is universally conceded. The form of these clubs changes. For a number of years the military idea was popular, in the form of military companies, boys' brigades, etc. Recently the "Boy Scouts" movement, originated by Gen. Baden Powell, has spread rapidly. This movement is not military in its form, but promotes outdoor life, field exercises, etc. Boys' clubs often fail of success for lack of trained leadership. There is an increasing demand for young men qualified to develop such clubs in such a way as to promote manliness, courage, honor, and good fellowship.

Clubs for girls develop along different lines. There are no great clubhouses for girls, and they do not take so readily to outdoor activities, though such sports as basket ball, gymnastics, and swimming are well adapted to girls. Girls' clubs take up art, domestic science, reading, literary societies, dramatic entertainments, etc. The need of efficient, trained leadership is manifest in the case of girls as well as boys.

Clubs for young women have been found most helpful. It is difficult to keep them within safe lines without destroying the initiative and independence of the women; but this difficulty has been overcome usually by securing the leadership of some wise woman who can so command the affection and confidence of the young women as to influence them successfully without depriving them of self-government; but many such undertakings have come to grief because of the difficulty of adjusting the relations between the young women and their well-meaning advisers. An example of a successful club for young women is the Jane Club, affiliated with Hull House in Chicago. The successful clubs for young women are usually associated with the Young Women's Christian Association, a social settlement, a lodging house or a luncheon club. Such a club is more likely to be successful under the leadership of some one wise and sympathetic woman than under the management of a committee of women. The committee is likely to err in the direction of too much attention to details, and not allowing enough self-direction on the part of the young women who compose the club.

Child Study, Children's Clinics.—The physical and psychological study of the child has come to be recognized as an indispensable feature of any practical program of prevention. Backwardness, restlessness, inattention, and even apparent viciousness are often due to discoverable physical defects. Apparent inattention may be due to deafness or defective vision. Backwardness and lack of concentration may result from adenoid growths, enlarged tonsils, or indigestion. Irritability may be due to defective teeth or to functional disturbance at the adolescent period. Recognition of these facts has led to the gradual development of a system of medical examination of backward and defective children in Boston, Chicago, Rochester, and other cities, culminating in legislative provision for a thorough medical examination of every child in the State of Massachusetts. Experience has demonstrated that a physical examination alone is not sufficient, and there is gradually developing a system of psychological examination of children, under the leadership of such men as the late Dr. Isaac M. Kerlin and Prof. Lightner Witmer, of Pennsylvania; Dr. Arthur C. Jelly, of Boston; Dr. G. Stanley Hall, of Clark University; Dr. D. P. MacMillan and Dr. W. J. Healy, of Chicago, and Dr. Henry H. Goddard, of Vineland, N. J. Following the leadership of Prof. Wundt, of Leipsic University, they are using such instruments as the chronoscope for measuring the rapidity of thought, the sphygmograph for studying the emotions, and the ergograph for ascertaining the characteristics and consequences of fatigue. Through these studies and others it is possible to ascertain the actual capabilities and limitations of the child, to discover whether he is capable of doing regular school work or whether he ought to be placed in a special ungraded school for backward children, or whether he ought to be placed in an institution for feeble-minded children. It is now possible for the first time to identify the comparatively small group of children who are "moral imbeciles," born without moral sense and incapable of distinguishing between right and wrong. Heretofore such children have been trained, disciplined, and punished. It is beginning to be recognized that they should be restrained and cared for, for the public safety, but that it is useless and cruel to send them to a reformatory, jail, or prison, just as it is useless and cruel to send an adult who is morally insane to a jail or prison. Probably some students expect too much from the psychological study of the child, but its practical utility, within reasonable bounds, has already been demonstrated.

Institutions for dependent children are maintained at public or private expense, or jointly by public and private agencies. State public schools for dependent children are maintained by Michigan, Wisconsin, Minnesota, and Colorado. In these states it is forbidden to commit children of sound mind and body to any almshouse, and the state public school receives all children who would otherwise be sent to the almshouse. The state public school is not an asylum in which children are to be brought up to manhood and womanhood, but a temporary resting place where they remain until they can be placed in selected family homes, either by adoption or on indenture, or, without adoption and indenture, remaining as wards of the school. Provision is made for a state agency (and in Michigan also a county agency) to select family homes and to watch over children placed in such homes. The state public school system has been very successful, and is highly valued in the states where it exists.

State Orphanages exist in the states of Montana and Oklahoma. Soldiers' orphans' homes, for the care of orphans of soldiers of the War of the Rebellion, are maintained in the states of Maine, Pennsylvania, Ohio, Indiana, Illinois, Iowa, and Kansas. The soldiers' orphans' homes are really free boarding schools for the children of indigent soldiers. It would seem an anachronism that such orphans' homes should be maintained forty-five years after the close of the War of the Rebellion. In Kansas, Iowa, and Illinois laws have been passed for the admission of dependent children, not children of soldiers, and for their placement in family homes. These laws have proven ineffective for the reason that the traditions of the soldiers' orphans' home do not favor the placing-out system.

In the State of Ohio there are about fifty county children's homes, in the State of Indiana, about forty, and in the State of Connecticut, five. There are a few county children's homes in Pennsylvania, Illinois, and possibly some in other states. The county children's home system was designed to displace the plan of keeping dependent children in public almshouses. In Ohio and Indiana it was expressly understood that it was to be connected with the placement of children in family homes. In practice, however, the tendency has been for the children to grow up in the county homes to manhood and womanhood. Many children have been placed in homes, but very few of the county children's homes maintain any adequate supervision of their placed-out children.

Orphan Asylums.—There are in the United States more than eight hundred private orphan asylums and homes for dependent children, with populations ranging from one to 2,600. Formerly the tendency was to multiply orphan asylums and to increase their capacity. It was the tendency also to retain many children until old enough to care for themselves. In recent years a reaction has set in. In Massachusetts the building of orphan asylums has practically ceased, and twelve or thirteen asylums and homes for dependent children have been closed within the past fifteen years. In Indiana ten or twelve county children's homes have been closed. In several other states the building of new orphan asylums has greatly diminished. The number of new asylums would be still smaller if intending testators would consult experienced people. Orphan-asylum care is being replaced by the plan of placing children in family homes, with or without payment of board. The orphan asylums and children's homes have largely ceased to bring up children, and the majority of them are used mainly for the temporary care of children whose parents are in distress.

The congregate system under which children are gathered in large numbers in one building is gradually giving way to the cottage system. Examples of cottage institutions for dependent children are the state public schools of Michigan, Wisconsin, Minnesota, and Colorado, the Rose Orphan Asylum at Terre Haute, Ind., the Albany Orphan Asylum, and the New York Orphanage at Hastings-on-Hudson. Most of the children's home societies, some of the societies for prevention of cruelty to children, and some of the juvenile courts maintain receiving homes or shelters for the temporary care of children awaiting placement in family homes or awaiting action of the court as to their disposition.

CORRECTION

Juvenile Delinquents.—Juvenile delinquency is variously defined under the laws of different states, but in general, a juvenile delinquent is a child under the age of seventeen who has violated some state or municipal law, or is incorrigible, who knowingly associates with thieves or vicious persons, or who frequents a gambling or other immoral place.

Formerly juvenile delinquents were tried and punished as criminals. In some states they were sent to prison with adults for definite terms. All authorities agree that under this method of treatment they became worse instead of better.

The establishment of the New York House of Refuge in 1825 for the separate treatment of juvenile offenders introduced a new era, and the enactment of the Illinois juvenile court law in 1899 introduced another new era in the treatment of juvenile delinquents.

Juvenile Courts. — The juvenile court is an evolution, not an invention. The essential features of the juvenile court were established in Ontario, Can., many years ago. Boston had separate hearings for children's cases long before the Illinois law, nevertheless it is generally agreed that the enactment of the Illinois juvenile court law marked the beginning of the juvenile court movement. Never in the history of jurisprudence has there been a more rapid extension of legislation of such far-reaching importance.

The case is not heard in a criminal court, a police court, or a justice's court, but in a probate court, a district court, a circuit court, or some other court of high standing. The judge is a jurist of repute. The proceedings are not criminal but civil. When the case is heard no prosecutor is present, but a probation officer is present "to represent the interests of the child." The proceedings are not "The State *vs.* Johnnie Jones" but "The State *pro* Johnnie Jones." A jury may be called if demanded by the representatives of the child, or at the discretion of the court; usually a jury of six men, not twelve.

In the hearing of the case the ordinary rules of evidence are not enforced. Ordinarily, an investigation has been made in advance by a probation officer, who is placed upon the stand and is allowed to give hearsay evidence, stating what he has learned from the child, his parents, the neighbors, etc. Other witnesses are present, but may not be called upon. The judge may interrupt proceedings, call the child to the bench, and hold a heart-to-heart talk with him. These apparently irregular proceedings would not be tolerated in ordinary court proceedings, but their propriety is generally conceded, because the proceedings are in behalf of the child and not against him. If a jury is present, they may find the child "delinquent" or "dependent," according to the evidence, but they do not find him guilty nor do they impose a penalty.

When the child is found delinquent or dependent, the judge may dispose of the case as he believes to be for the benefit of the child. He may return him to his parents with an admonition. He may send him home and place him under the care of a probation officer, with instructions to see that certain orders of the court are carried out. He may commit him to a juvenile reformatory, a children's home, or to the care of a child-helping society. In either case the child is committed for care and training, not for punishment. The judge may place the child in such care with authority to place him permanently or temporarily in a family home, or the judge may commit the child temporarily, reserving jurisdiction of the case for future action. The whole effort of the court is to obtain the fullest possible information, and then to act with an eye single to the best interests of the child.

Juvenile Probation.—Under the juvenile court law many children who would formerly have been sent to a juvenile reformatory are placed on probation under the care of a probation officer of the juvenile court, who may be a man or a woman. It is the duty of a probation officer to get into close touch with the child's home, to advise the parents, to consult with his teacher or employer, and in every possible way to maintain a friendly and helpful relation to the child. If it is found impossible to keep the child from new acts of delinquency, the probation officer brings him back into the juvenile court for further action of the judge. In some cases the order of the court authorizes the probation officer to find another home for the child, either permanent or temporary.

A wise probation officer is often able to accomplish surprising improvements in the condition of the child's home, and to transform the hostile attitude of the parents into one of confidence and willing cooperation. Probation officers are usually appointed by the court. In Chicago, New York, and some other cities, they are selected by civil service examinations, which, however, are informal and non-technical with a view to securing probation officers of the highest possible discretion, conscience, tact, and adaptability.

Juvenile Reformatories. — In 1825 the New York House of Refuge was established for the care and treatment of juvenile offenders. The trustees had authority to release the children on parole before the expiration of their term.

This plan was gradually extended to other states until nearly every northern state and some southern states had established one or more juvenile reformatories. In many states separate schools have been provided for delinquent girls. These schools are known as houses of refuge, reform schools, industrial schools, or training schools. Some are named for a town or an individual.

Institutions for delinquent children are, as a rule, maintained from the public treasury and administered by public officers. In the states of New York and Pennsylvania there are juvenile reformatories, administered by private corporations and sustained in whole, or in part, by appropriations from the public treasury. In a number of states delinquent girls are sentenced by the court to "refuges," "Houses of the Good Shepherd," etc., private institutions in which their maintenance is paid for from the public treasury. Almost universally in the United States the institutions for delinquent children are regarded not as penal, but as reformatory institutions, and the children committed to them are regarded not as prisoners or objects of punishment, but as wards to be cared for, trained, and educated.

Time sentences have almost entirely given way to indefinite commitments under which the trustees or directors (sometimes the judges) have authority to release the child on parole whenever it is believed that he has reached the point where he may safely go at large. Paroled children are placed in carefully selected families and are kept under the friendly supervision of a sympathetic parole officer.

The object of the modern juvenile reformatory is the creation and establishment of good character. The methods by which this object is sought differ under different administrations, but are essentially as follows: (1) an absence of prison features; (2) encouragement of self-control and self-dependence; (3) careful education, religious, intellectual, and physical, with trained teachers selected for special fitness; (4) a large farm, well located, with good land, water, drainage, etc.; (5) a well-conceived plant of the cottage system with modern school equipment, manual training facilities, etc.; (6) an efficient corps of officers and employees selected with sole reference to their fitness for the task in hand; (7) a board of directors capable of administering the institution along these lines.

Schools for delinquent girls should include: a farm with much outdoor life and care of animals, cottages with separate room for each girl, industrial training, including a thorough grounding in domestic science with special industrial training for girls of special aptitude, and graduation into a selected family where the work of the school will be completed, not undone. It is generally agreed that the superintendent of a girls' school should be a woman.

Most juvenile reformatories are located on farms containing from 300 to 1,000 acres. Reformatories for girls are usually located on farms of from ten to 160 acres. The present tendency is to have larger farms and smaller cottages. The Children's Village, a boys' reformatory at Dobb's Ferry, in New York, has cottages containing twenty boys each; the New York Training School, to be located in Westchester County, N. Y., is expected to have cottages for sixteen boys each. The State Agricultural and Industrial School at Industry, N. Y., has a large farm divided into small farms, each with a family of boys, a cottage, a stable, and live stock of its own. Among the most notable reformatories for boys are the State Agricultural and Industrial School and the Children's Village in New York, the Boys' House of Refuge at Glen Mills, Pa., and the St. Charles School for Boys in Illinois.

The most modern reformatories for girls have cottages for about thirty girls each. In many of these cottages there is a separate room for each girl. Among the best reformatories for girls are the State Training School at Geneva, Ill., the Indiana School for Girls at Clermont, the House of Refuge for Girls at Darling, Pa., and the State School for Girls at Hudson, N. Y.

The success of a juvenile reformatory depends less upon the physical plant than on the character and fitness of the superintendent. No institution makes a higher demand upon its superintendent than a juvenile reformatory. It requires a man or woman of high education, administrative skill, discernment in selecting employees, power to inspire and develop the latent capabilities of backward and unpromising children, and ability to secure necessary support from trustees and legislators. Such talent is in demand at high salaries.

Lock-ups.—Lock-ups are used for the temporary detention of village prisoners awaiting trial. This detention is usually brief. A few police stations are used for the confinement of sentenced prisoners. Village lock-ups are usually located either in the cellar of a town hall or village building, or in a room with small windows on one side, or in a small detached building. Such rooms are usually dark, badly ventilated, and unsanitary. The walls are often of rough stone or brick, affording an impregnable harbor for vermin and germs. The floors are usually rough and hard to keep clean. The beds are often wooden bunks. The bedding consists of cheap mattresses and cotton quilts, which become filthy on first use and cannot be renovated. In some states the village lock-ups are usually detached buildings constructed of wooden scantling or planks. Such buildings cannot be kept free from vermin, and are a menace to the lives of prisoners because of the danger of fire. Many prisoners have been cremated in such lock-ups. Very few lock-ups in the United States are fit places in which to imprison a human being over night. There must always be a first time for a man to be locked up. It is most unfortunate if the first prison experience is such as to add to the degradation of the prisoner.

Police stations are usually better kept than the village lock-ups, but many of them are unfit for use, unsanitary, and are so constructed as to compel the close association of prisoners good and bad. It was formerly common for women and children to be imprisoned in close proximity with male prisoners. In most city police stations there is now provision for matrons, who take charge of women prisoners in separate departments. Juvenile court laws now prohibit the keeping of children in jails or police stations in the majority of the states.

County Jails.—County jails exist in all parts of the United States. In some of the older states very primitive jails exist. Some are constructed of wooden scantling; others are located in the basements of court houses. Many of them are so constructed that they cannot be kept in sanitary condition. Cell rooms often have brick walls which absorb moisture and germs. Windows are often barred by flat bars which cut off two-thirds of the light. In some cases there are double bars. In many jails there is a lack of suitable sanitary provisions. Some jails have wooden floors, while others have broken concrete floors, or rough stone floors.

Most of the newer jails of the United States are built upon the cage plan. An interior cage of steel or iron is set back from four to twelve feet from the outside window. Inside the cage is a corridor, where prisoners associate promiscuously; back of the corridor are the cells, which are necessarily dark and ill ventilated. De Tocqueville seventy-five years ago said that the American jails were the worst prisons in the world. That indictment would not be an unjust one as applied to many jails to-day. Students of prisons generally agree that the county jails are schools of crime, and that the promiscuous association of prisoners is utterly pernicious. It is generally agreed by close observers that prisoners, as a rule, come out of county jails worse than they go in.

County jails are used for two distinct and inconsistent purposes: on the one hand, for the temporary detention of prisoners awaiting trial, and, on the other hand, for the punishment of petty offenders. The constitution guarantees that every person shall be treated as innocent until proven to be guilty. Therefore the accused person should be kept as humanely and comfortably as conditions will permit, until his guilt is proven.

The problem is this: given the same jail, the same room, the same food, and the same jailer to provide, in the one case, for a humane and comfortable detention, and in the other case for a bitter and deterrent punishment. This is entirely possible, and it is accomplished in many jails. The difficulty is that we give the humane and easy detention to the wrong person, and we give the bitter punishment to the wrong person. The jail convict is a petty thief, a drunkard, a vagabond, or a tramp. Dirt and vermin have no terrors for him. Given a warm fire, plenty of food, no work, a pipe of tobacco, and companions of his own sort, and he is happy; turn him loose and he will steal to get back. But take a decent citizen, mistakenly accused of crime; thrust him into a steel cage where he has no place to take a bath and cannot keep himself free from vermin; put him on exhibition like a wild beast in a menagerie; force him into association with the vilest criminals in the community; lock him up with one to five other prisoners from dark until daylight in a cell six and one half by nine feet; compel him to listen day and night to the vilest language in the thieves' dialect —there can be no worse punishment for a decent person. Yet he is the one who should receive humane and comfortable detention until his guilt is proven.

Short Sentences.—It is the general practice in the United States to inflict short sentences ranging from five to ninety days for petty offenses, such as drunkenness, vagrancy, petty larceny, etc. These sentences are usually made alternative with the payment of a fine, so that the prisoner who has money or can find some one to pay his fine, escapes imprisonment. It is the general consensus of judges, police officers, and superintendents of prisons for misdemeanants that such short sentences are worse than useless because they afford no opportunity for reformatory treatment, and they entail upon the public the expense of constantly repeated arrest, arraignment, commitment, and imprisonment without return in remunerative labor. In some states the law provides for cumulative sentences, increasing in length with each new conviction; in other states the law provides for sentences to workhouses on an indefinite sentence subject to parole under supervision.

Imprisonment of Misdemeanants in County Jails.—The practice of sentencing prisoners for punishment to county jails is widely prevalent in the United States. Such sentences usually range from ten days to ninety days, but in some states prisoners may be sentenced to jail for as long a period as two years. As a rule, such prisoners receive the same treatment in all respects as prisoners awaiting trial, and are kept in association with them. In some jails separate departments are provided for sentenced prisoners, but that is an exception. The association of sentenced prisoners with prisoners awaiting trial, is demoralizing and inflicts unnecessary hardships upon the latter who are entitled to be treated as innocent until proven to be guilty.

Prisoners serving sentence in jail are usually kept in idleness except that they are required to do the policing of the jail and sometimes other domestic work. Such work usually employs only a small portion of their time, leaving the greater part for demoralizing association. It is a common experience for prisoners of this class when discharged in cold weather, to steal in order to get back to the comfortable and congenial atmosphere of the jail.

City Houses of Correction.—Most of the large cities in the United States maintain city workhouses or houses of correction for the punishment of offenders against city ordinances. Some of these houses of correction receive also county prisoners who are sent to the house of correction instead of the county jail. Institutions of this class almost without exception, are handicapped by the very large number of short sentences. It is a common thing for prisoners to serve twenty-five or fifty sentences in one institution, and in some cases the number of such sentences of a single individual have run up to 100 or even 150. The houses of correction are also handicapped by the large number of sick, diseased, and crippled prisoners, feeble-minded prisoners, inebriates, and victims of the drug habit, who are committed to them, usually for short terms. This practice imposes upon the prison the functions of a hospital without hospital conveniences, and without sufficient time to effect a cure. The absurdity of committing an inebriate to a hospital for ten days with any hope of benefiting him is manifest. The same principle applies to "dope fiends," syphilitic patients, and other diseased prisoners.

Industries.—Under these handicaps the successful organization of industries in a house of correction is extremely difficult. It forces the management to introduce extremely simple industries, such as basket making, cane seating, brush making, and the like. The Detroit House of Correction made a success of a chair factory for many years, but this success was made possible by a large number of longer-term prisoners from outlying counties and from the United States Government. The Chicago House of Correction has made a success of manufacturing brick for the city, and maintaining an incinerating plant for city garbage. The St. Paul city workhouse employed prisoners for several years in improving an adjacent park.

The State of Massachusetts has maintained for many years successfully a state farm near Boston, where the prisoners are employed partly in farming and partly in reclaiming waste land which has been made valuable by their labor. The same plan has recently been adopted by Cleveland, which has established a large farm for the employment of prisoners of this class, where their labor is made available in the production of food supplies for the almshouse and the city hospital. The public farm system has great advantages over the old system of a factory plant on a small tract of land within city limits. It is probable that this plan will be generally adopted for the care of municipal prisoners.

County Penitentiaries. — In the State of New York there is a considerable number of county penitentiaries which are used for the imprisonment of misdemeanants. The administration of these prisons is similar to that of the city houses of correction. The system is much preferable to imprisonment in county jails because the sentenced prisoners are separated from prisoners awaiting trial, and a suitable labor system can be carried on.

State Prison for Misdemeanants. —The State of Michigan maintains a "State House of Correction and Reformatory" at Ionia, to which are sent the petty offenders of all ages, and also young prisoners above the age of sixteen who need reformatory treatment.

The State of Indiana maintains at Indianapolis a reformatory prison for women, to which are sent all women convicted of felony in the state, and also, under a new law, women convicted of misdemeanors in all parts of the state. The endeavor to unite a reformatory prison for men and women, mostly of the younger class, with a prison for petty offenders of all ages, presents serious difficulties, but the plan of state care for misdemeanant prisoners has very great advantages. As a rule, state institutions are better organized and administered than county or city institutions, and are less likely to fall under the baneful influence of partisan control. Such institutions share in the general improvement of state prisons and state reformatories, and the tendency is to standardize the work of the three classes of institutions together. The ideal plan for the treatment of misdemeanant prisoners would be district farms located at convenient points in different sections of the state, but maintained and administered by the state government. A precedent for this method is found in the state hospitals for insane. Such district farms should be administered by a single board—preferably the same board which administers the state prisons.

State Prisons.—Under the title of state prisons are included prisons, penitentiaries, and reformatories for the treatment of adult felons. Such prisons exist in one form or other in every state of the Union.

Prisons of this class receive all of the felons sentenced to imprisonment not cared for in adult or juvenile reformatories. The state prisons of the United States are organized usually on the "Auburn" plan of separate cellular confinement at night with congregate employment by day. Most of these prisons adopt the "silent system," under which conversation and other communication is forbidden under penalty. Nearly all American state prisons have cell houses in which the cells occupy a central block set back from six to eighteen feet from the windows. Very few have cells set against the outer wall.

The Eastern Penitentiary at Philadelphia was built originally with large cells against the outer wall, designed for the separate confinement of each prisoner at all times. This "Philadelphia system" has been adopted by some foreign countries, and it prevailed for a short time in the Western Penitentiary at Allegheny, Pa.; but it has now been discarded in both of the Pennsylvania institutions.

Formerly prisoners were fed in their cells in many state prisons; now congregate dining rooms are used almost exclusively.

Flogging and other methods of severe physical punishment have been discarded in most American prisons. They have been replaced by solitary confinement in punishment cells (sometimes dark cells and sometimes light cells), usually with restricted diet, by withdrawal of privileges such as writing and receiving letters, use of tobacco, etc., and by forfeiture of parole privileges whereby the prisoner's term of service may be shortened.

Parole System. — In many states laws have been passed establishing a system of grades, marks, and paroles whereby prisoners giving satisfactory evidence of reformation may be released before the expiration of their sentence under the friendly supervision of a parole officer. The parole system has produced good results in those states where it has been based upon actual evidence of established character. Results have been unsatisfactory whenever the parole system has been made subject to political and personal influences, or whenever the parole board has allowed sentimental appeal to influence them in the absence of substantial evidence of good character.

Among the best administered state prisons of the United States are the Connecticut state prison at Wethersfield, the women's department of the Auburn, N. Y., penitentiary, the Indiana state prison at Michigan City, and the Minnesota state prison at Stillwater.

United States Prisons.—Until recently, the United States Government has made use of various state prisons for the confinement of prisoners convicted of offenses against the laws of the general government. Recently the Federal Government has established two prisons, one at Leavenworth, Kan., and one at Atlanta, Ga., which provide for prisoners of the United States. The Leavenworth prison is under the charge of the veteran prison warden, Robert W. McClaughry, for many years warden of the Illinois state penitentiary at Joliet, and more recently superintendent of the Pennsylvania State Reformatory at Huntingdon.

The Leavenworth prison is being built on modern principles of American prison architecture. The prison is being constructed entirely by labor of the convicts, affording means of employment against which there can be no possible criticism.

THE INTERNATIONAL PRISON CONGRESS

O. F. Lewis

The Eighth International Prison Congress met in the United States for the first time at Washington, D. C., October 2–8, 1910. The United States appropriated $20,000 for expenses. The foreign delegates were met at New York in Sept. by an American committee, and taken in a special train to visit state reformatories at Elmira, N. Y.; Mansfield, Ohio, and Jeffersonville, Ind. They visited state prisons at Auburn, N. Y.; Joliet, Ill., and Michigan City, Ind. They visited juvenile reformatories for boys at Industry, N. Y.; Chicago, Ill.; St. Charles, Ill., and Plainfield, Ind. They visited juvenile reformatories for girls at Geneva., Ill., and Clermont, Ind. They visited also the George Junior Republic. Official delegates were in attendance from about forty foreign countries, including all of the leading nations of the world.

The congress adopted advanced resolutions in many fields of penology and criminology. It approved the scientific principle of the indeterminate sentence; advocated the labor of all prisoners, whether confined for long or short terms; the centralization of direction of all penal institutions, including houses of detention and jails; the training of prison officials; the development of conditional relief or parole on the recommendation of a properly constituted board; the caring for conditionally liberated prisoners by state agents, by specially approved associations or individuals. The congress put itself on record as believing that no prisoner, no matter what his age or past record, should be assumed to be incapable of improvement, and that the reformatory system is incompatible with short sentences. Prisoners should be paid according to their industry, the amount thus allowed being administered for them for the support of dependents and for providing a fund for rehabilitation after release.

The congress resolved that the experiments of the last ten years, providing special establishments for the detention of habitual criminal drunkards for long periods have been successful, and that further extension is advisable. The congress reaffirmed its belief in labor colonies for tramps and vagrants, and went on record as upholding the principle of probation and its extension. As to young delinquents, the congress held that they should not be subjected to the penal procedure now applied to adults, but that the principles in general of the American juvenile court should be followed.

In short, the international congress, while recognizing the need of the most modern methods of treating prisoners during imprisonment and the period of rehabilitation, took an advanced step in advocating various fundamental preventive measures.

The next congress will be held in 1915 in London, Eng., under an English president, Sir Evelyn Ruggles-Brise.

PRISON LABOR

Prison labor in the United States is carried on under six different systems:

1. *The Contract System.*—Under this system the state receives a fixed rate per diem for each convict, the convicts being entirely under the discipline and control of the officers of the prison, the contractor furnishing his own material, machinery, and instructors.

2. *The Piece-price System.*—Under this system the convicts work by the piece, and the state receives payment accordingly. In this case also the contractor furnishes material, tools, etc., and tasks are assigned according to the estimated capability of the convict.

3. *The Convict Lease System.*—Under this system the labor of the convicts is leased to the contractor, who, as a rule, provides clothing, food, medical attendance, and foremen, paying a fixed sum annually for the labor of each convict. The state furnishes guards, and is supposed to be responsible for the discipline. The convict lease system prevails extensively in the southern states. Leased prisoners are usually worked in the open on railroads, tunnels, farms, etc. Many complaints have been made of the operation of this system, and it has been abandoned by a number of states which formerly practiced it. The convict lease system is remunerative to the state, but it is very difficult under it to protect the prisoner.

4. *The State Account System.*—Under this system the state furnishes capital, material, tools, and machinery, and the products of the labor belong to the state. The state account system requires for success wardens of business ability and experience and divides the attention of the warden between the discipline of the prison and the carrying on of its industries.

5. *The State Use System.* — This system is a form of the state account system. Under it the products of the convict labor are either consumed for the prison itself, or are sold in other public institutions. Under the New York State law public institutions are required to purchase material produced in the state prisons, providing they can furnish what is needed. In some states convict labor is employed in building roads, reclaiming waste lands, and other public improvements. This is a form of the state use plan. Mr. Joseph P. Byers reports as follows:

> On Oct. 1, 1909, the total number of prisoners in the penal institutions of the United States was approximately 79,000. Of these there were in state and national prisons and penitentiaries, 57,500; in county and municipal workhouses, 12,750; in adult reformatories, 8,750. Approximately 53,200 of the whole number, 67 per cent, were industriously employed. Of the remainder 17,500 were occupied in routine institution work; 2,600 in trade schools; 2,800 sick and disabled, and 2,900 idle (able-bodied).

Great emphasis is laid upon the importance of so regulating convict labor as to prevent its competition with free labor. In practice this is absolutely impossible. All authorities, prison officers, penologists, and labor officials agree that convicts should not be kept in idleness. They agree likewise that they should be employed productively. There is no possible way of employing convicts productively without competing with free labor. If the convict sweeps his own cell, he takes the place of a chambermaid. If he cooks his own food, he takes the place of a cook.

The state use system is widely favored as a plan for obviating competition with free labor, and appears to be generally acceptable to the labor unions. It is certainly proper that the state should use the labor of convicts for its benefit; yet this system does not prevent competition. What better customer has the manufacturer and the wholesaler than the state institution, which uses large quantities, buys continuously, and is sure pay? The convict goes to prison because he has failed to compete with free labor. The only way to make him a good citizen is to make him a competitor with free labor. It would appear that the rational plan would be to accept the competition of convicts' labor with free labor as a necessity, but to market the product at a fair price, and to require the distribution of the convict labor among the different industries as widely and as equitably as possible.

6. *The Parole System.* — By the parole system is meant the release of prisoners and inmates of juvenile reformatories before the expiration of their term on a pledge that they will conform to certain prescribed regulations as to residence and conduct. The parole system is used by all juvenile reformatories, by all adult reformatories for men and women, and by a considerable number of state prisons.

In some states there is a general state parole officer, who serves for more than one institution; but most institutions which parole inmates employ one or more probation officers. The State Board of Trustees of Juvenile Reformatories in Massachusetts has under its charge about 300 paroled girls and about 900 paroled boys. They employ 8 visitors or parole officers for the 300 girls and 5 for the 900 boys, making a total of 13 visitors for 12,000 paroled children. The success of the parole system is absolutely dependent upon the faithfulness, wisdom, and sympathy of the parole officers.

Paroles are extended in some states by state pardon boards, in others by judges of the courts, and in most cases by the board of administration of the prison, usually under the advice or on the recommendation of the prison warden. The latter plan has some decided advantages, because the officers of the prison are able to know the convict more intimately than any outside parties.

Paroles should be conditioned on satisfactory evidence that the prisoner has attained such a character that there is good reason to expect that, if liberated, he will lead an upright and honorable life. The practice of allowing attorneys or other persons to present petitions to bring to bear political influence, and to make sentimental pleas in favor of a parole is pernicious, and should be steadfastly rejected.

7. *The Probation System.*—The probation system differs from the parole system in that it provides for the release of persons without commitment to prisons or other institutions. The probation system is extensively used for juveniles under the juvenile court laws of the several states, and is the essential feature of the juvenile court system. The probation system for adults is gradually being extended to misdemeanants of both sexes. The success of the probation system is dependent upon the character and efficiency of the probation officers, volunteer probation officers. "Big Brothers" and "Big Sisters" are used in connection with some courts. Such volunteers may be of great use, provided their work is directed and supervised by competent paid officers; but the use of inexperienced probation officers without competent advice and direction is very hazardous, and ought not to be permitted. On the other hand, the shock of arrest and arraignment, if accompanied by wise admonition and counsel from the judge, is in many cases more efficacious for the reformation of a prisoner than a long term of imprisonment.

CHARITY

STATE BOARDS

State boards of charities are advisory boards created by state legislatures to supervise the charitable and correctional institutions of the state. Such boards usually consist of five or six members (the New York board consists of twelve commissioners). These boards are given power to visit public institutions of the state, counties and cities, and in some states to visit private charitable institutions. They are given power to require information and reports, and to conduct investigation of alleged abuses, and in general, to investigate the entire system of charitable and correctional institutions, and to report to the legislature.

These state boards of charities have limited executive powers. In some states (as formerly in Illinois) they audit accounts of public institutions. In some states (as in Massachusetts and Indiana) they act as guardians of children who are wards of the state. State boards of charities of the advisory class exist in Massachusetts, New York, Pennsylvania, Ohio, Indiana, Colorado, California, and other states. State boards of charities have exercised a powerful influence toward improved methods of caring for the poor, the insane, the feeble-minded, epileptics, and other dependent and defective classes. They have also contributed to the development of modern prison methods. The secretary is the executive officer of the board, and is usually a man of superior ability.

State boards of control are state boards of trustees. Usually such boards administer all of the charitable institutions of the states where they exist. In some states (as in Wisconsin and Minnesota) they control also the correctional institutions; and in some states (as in Minnesota) they exercise certain functions relative to state educational institutions.

State boards of control usually consist of from three to five members who are paid an annual salary, and are required to devote their time to their duties. They have entire administrative control over the public charitable institutions, including the appointment of superintendents, the purchase of supplies, and the erection of new buildings. In some states they exercise all of the functions which are exercised by advisory boards of charities. The secretary of a board of control is usually a clerk or bookkeeper at a moderate salary, and is not expected to be a man of executive force. In the states of Minnesota and Illinois there is also an advisory board, performing the duties of a state board of charities. Those who advocate state boards of control claim that they coördinate the charitable work of the state, tend to the improvement of the public service, and result in large economies of administration. Those who prefer the advisory boards maintain that the board of control system tends to give undue prominence to the financial side of administration, and that they tend to center all knowledge of the public institutions in themselves, and to discourage public interest in the institutions. In the states of Iowa and Minnesota, contributions of employees of the state institutions for political purposes are forbidden by law, and the law is enforced.

The administration of state boards of control has varied. In some states they have been free from political duties, and have administered with manifest regard for the public welfare. In other states they have fallen under partisan control, and have become instruments of serious abuses. A bill for a state board of control was introduced in the Ohio legislature of 1910 on the recommendation of the governor. The bill passed both houses, with numerous amendments, but was finally vetoed by the governor. The board of control system is yet on trial.

State Boards of Lunacy.—In Massachusetts and New York state boards of lunacy perform the functions with reference to the case of the insane, which are performed in other states by advisory boards of charities. In the state of Pennsylvania, the work of a state board of lunacy is performed by a committee of the board of state charities, which is in effect a state board of lunacy. In states where many hospitals for insane exist, there is abundant work for such a board, and some of the boards of lunacy have been efficient in developing the new movement in the care of the insane.

State Superintendents of Charities.—In the states of New Jersey and Oklahoma the law provides for a state superintendent of charities who performs the duties which are performed in other states by an advisory board of charities. This system has advantages in concentrating responsibility, but it has two disadvantages. The superintendent lacks the counsel of a selected board of intelligent citizens, and he lacks the support of such a board when he becomes a target of unjust suspicion or abuse.

PUBLIC CARE OF THE POOR

Public care is extended to the poor in several ways; by direct relief, in the form of cash payments or material relief given to the poor in their own homes; by payment of board in private families from the public treasury, and by public "alms-houses" or "poor houses."

Public Outdoor Relief.—Public outdoor relief is extended by the payment of cash or by furnishing material aid in the form of provisions, clothing, etc. The extension of public relief has been strongly opposed by social students, who have maintained that the necessary aid can be provided from public sources and could be distributed much more wisely by public officers. It is agreed that in many communities "outdoor relief" has been extended without system, and in such a way as to pauperize the recipients. Numerous instances have been discovered where this form of relief has been shamelessly employed for the benefit of petty politicians, as was clearly shown by the large increase of such distributions immediately before the election. Public outdoor relief has been abolished in the City of New York and in some other cities. It has been very greatly curtailed in the states of Ohio and Indiana, by requiring public accounting and by stimulating the public conscience in the matter of the wise and careful use of such relief.

More recently there has come a reaction in favor of the discriminating use of outdoor relief. The importance of preserving family life is recognized. It is now generally agreed that no family should be broken up simply on account of poverty, and that where there is a mother with reasonably good character and faithfulness, means should be provided from public or private sources, which will enable her to bring up her own children in her own home. Less stress than formerly is laid upon the advantage of distributing relief in kind. Cash can often be used more economically and more efficiently by a poor family than the same value spent for provisions and clothing.

The need of instruction to officers charged with the duty of caring for the poor, and the necessity for more conscientious, intelligent, and faithful administration of this duty is generally recognized.

Care of the Poor in Almshouses.—Almshouses are maintained at public expense and administered by public officers for the care and maintenance of paupers. In Massachusetts a state almshouse is maintained for certain paupers, who are recognized as a charge upon the commonwealth, while town and city almshouses are maintained for paupers who are municipal charges. In some states all almshouses are county institutions, while in other states (as in Ohio) there is a mixed system of county and town almshouses. In some communities the "workhouse" test prevails, and outdoor relief is refused to paupers who refuse to go to the almshouses. This rule works a hardship on old men and old women who have lived industrious and honest lives, and who can maintain little homes of their own with a smaller expenditure than would be necessary to support them in the almshouses. In the almshouses they are forced to associate with those who have become paupers through intemperance, vice and shiftlessness.

The population of almshouses varies. Some state almshouses contain aged people, insane, feeble-minded, epileptic and dependent persons, and shiftless tramps. In others provision is made elsewhere for the insane, feeble-minded, epileptic, and the sick poor. In the farming states of the West very few able-bodied almshouse paupers are found, for the reason that such people can find employment which will at least pay for their board.

An almshouse is always an unfit place for a sick person, an insane person, a feeble-minded person, or a normal child. It may be possible, with proper discipline, to furnish suitable care of senile dements, but even this class can be much better cared for in suitable asylums for the insane, with very little increase in cost. Feeble-minded girls are exposed to unnecessary hazard in almshouses, as is witnessed by the multitude of children begotten and born to such mothers in almshouses. For the past forty years it has been recognized that normal children should not remain in almshouses, for the reason that they almost infallibly grow up to become paupers, criminals, tramps, and prostitutes.

The plan of farming out paupers to be boarded with the lowest bidder formerly prevailed widely. Sometimes it was applied to county almshouses, the farmhouse and inmates being given to the lowest bidder. This inhuman method has happily become infrequent.

PRIVATE CARE OF THE POOR

The institutional care of the poor by voluntary agencies, whether in a suitable institution or by assistance in their own homes, has prevailed from time immemorial. Its value is recorded not only as an efficient and humane method of dealing with the unfortunate, but also as an invaluable experience to teach the finer instincts of humanity.

Private Homes for the Poor.—Homes for the aged are maintained in many cities under the auspices of the Roman Catholic Church through the Little Sisters of the Poor. These homes are sustained by the beneficent gifts of the community. It is a rule of the Order that, if provisions run short the sisters go hungry, but the old people are fed. Homes for aged men and homes for aged women are also maintained by different denominations of the Protestant and Jewish faiths, and by associations that are not connected with any church.

Homes for the aged have to establish a minimum age at which applicants are received, most of them requiring a small entrance fee, usually from $300 to $500. Nearly all homes of this class have a waiting list of applicants. Self-respecting poor persons greatly prefer institutions of this class to the public almshouse. Those who are familiar with the average almshouse population can sympathize with the self-respect, which makes them unwilling to enter the public institutions.

Outside Private Care of the Poor.—Assistance is given to the poor outside of institutions by many associations. The various fraternal orders extend assistance to the members of their fraternities in case of need. There are also numerous national orders composed of Englishmen, Frenchmen, Germans, Italians, etc., which extend aid to their members.

A great number of "relief societies" and "provident societies" exist throughout the country. Most of these organizations have been established for many years, and their principal object is to bring relief to the poor. As a rule, such societies have sought the maximum relief with the minimum of administrative cost. Some such societies have adopted advanced methods of preventive and reconstructive work for needy families.

During the last forty years there has grown up a system of "Charity Organization Societies" and "Associated Charities" through the country. These societies endeavor, first, to bring into effective coöperation all of the existing philanthropic organizations of the community; second, to undertake a thorough system of studying and recording the history and the needs of the poor in each community, collectively and individually; third, having ascertained the need, to cause that need to be adequately met, whether by the organization itself or by some other organization or individual in the community.

The charity organization societies have laid less stress upon the matter of material relief and more stress upon personal service. They lay much emphasis upon the endeavor to help the poor to help themselves, by promoting provident schemes, etc.

In some cities, like Cleveland and Chicago, the charity organization societies and the relief societies have consolidated, while in other cities, like New York and Boston, they have come into close and efficient coöperation. In still other cities, like St. Louis, the relief societies or the provident societies have taken up the methods of the charity organization societies.

The tendency of the private charity agencies is more and more toward work for the prevention of pauperism, the rehabilitation of families and the promotion of self-help, and at the same time in the direction of making relief, when it is necessary, more efficient than formerly.

The improvement of the work of charitable societies is being promoted by the Schools of Philanthropy, which have grown up within recent years in New York, Chicago, Boston, and St. Louis. Similar schools are being organized in Philadelphia and Milwaukee.

TREATMENT AND CARE OF THE INSANE

In early years the insane were treated as *quasi* criminals; they were arrested, locked up in jail pending trial, tried on a complaint before a jury, conveyed to the asylum by a sheriff, sometimes tied with ropes or wearing steel handcuffs. In the asylum they were locked up behind barred windows; if restless and excited, they were locked up in cells, strapped down to benches, or made to wear leather muffs and restraining belts. In Lexington, Ky., the writer saw iron rings in basement cells where patients were formerly chained to the wall. In many hospitals patients were shut up in wooden cribs with barred covers, locked down.

In Wisconsin insane patients in poorhouses were kept in wooden buildings, having cells each side of a corridor; the cells sloped toward the middle corridor and patients were bedded down with straw like cattle. The best asylums employed untrained attendants of the grade of farm hands and servant girls. In Minnesota, as late as 1885, women attendants began at $10 per month and worked up to $14; male attendants began at $18 and worked up to $25; a supervisor, responsible for the care of three hundred patients, drew $40 per month. Sedatives were freely used to keep patients quiet at night.

A revolution was wrought twenty-five years ago by the gradual abandonment of harsh restraints, the introduction of open wards, the increase of the medical force, the establishment of training schools for nurses with increased pay, the adoption of the cottage system, the increase in recreation, congenial employment and outdoor life.

A second revolution has been wrought during the past ten years by the elevation of medical standards, the establishment of pathological laboratories, the introduction of psychopathic institutes, the substitution of outdoor exercise and hydropathic treatment for sedatives and restraint apparatus, legislation permitting voluntary commitment of neurasthenic patients, the establishment of receiving wards for temporary treatment and study of patients before commitment, the employment of trained nurses instead of sheriffs, to convey patients to the hospital without mechanical restraints or humiliating exhibitions, and, in general, the recognition and treatment of an insane person simply as a sick person.

State Hospitals and Asylums.—The plan of state care for all insane patients is advocated by many of the best authorities. New York and Minnesota provide for all insane patients in state hospitals and asylums. Illinois has legislation looking to the same plan. Possibly two or three other states have adequate state care for all insane patients. In the rest of the United States the state hospitals are inadequate and patients are thrown back upon the counties to be cared for either in the county almshouses or in county insane asylums. A personal inspection of many institutions for the insane proves that state care is almost invariably much superior to county care. The state constructs better buildings, secures more competent and efficient superintendents and better organization. County officials desire to make a record for economy, and they generally, while state institutions are better supported, economize below the limit of efficient care.

Prior to 1885 most of the hospitals for insane were built on the Kirk-bride plan of a central administration building with diverging wings. Since that time the new hospitals have been built chiefly on the cottage plan, under which most of the patients are housed in cottages accommodating from twenty-five to fifty patients. Some cottage institutions have larger buildings for excitable patients and sick patients. Most of them have an administration building containing offices, etc. Many of the cottage institutions have central heating plants, kitchens, and dining rooms. A few hospitals have central kitchens from which the food is distributed by wagon to dining rooms in the cottages. A few hospitals have cottages which are complete domestic establishments, each with its own heating plant, kitchen, and dining room. This latter plan is gradually coming into favor. The congregate dining hall gives little opportunity for pleasant and homelike eating. Under the plan of distributing food to cottages from a central kitchen it is practically impossible to serve food hot and appetizing.

Overcrowding is almost universal in state hospitals for insane for the reason that it is impossible to induce legislatures to make provision fast enough to meet the rapid growth of the insane population. The only state in the Union, so far as the writer can learn, where there is no overcrowding in any state hospital for insane, is in the State of Wisconsin, which has prevented overcrowding by legislation which permits the construction of additional asylums for the insane without legislation and operates automatically to provide increased accommodation in advance of the need.

Intelligent discussion of state care of the insane will be found in the annual reports of the Massachusetts State Board of Lunacy, New York State Board of Lunacy, and, especially, in the final report of the Illinois State Board of Charities (1910).

County Asylums for the Insane.—County provision for insane patients has been almost uniformly bad. The reports of the State Boards of Charities of New York, Pennsylvania, Ohio, Indiana, Illinois, and Wisconsin, bear testimony to this fact. One reason for this failure is the fact that county care has been considered temporary and the hope has been cherished that state care would overtake the need; but this hope has proved delusive and, meanwhile, buildings have gone into decay, while overcrowding has increased and the patients have suffered untold misery.

In Wisconsin an adequate and satisfactory system of county care has been in operation for the past thirty years. Prior to 1880 county care in Wisconsin was almshouse care and was both inadequate and disreputable. The present system was adopted under the leadership of the State Board of Charities and Reform. The Wisconsin law provides that each county should be chargeable with $1.50 per week, estimated to be one-half the cost, of each patient maintained in a state hospital. A law was enacted providing that whenever any county should erect a suitable county asylum on plans approved by the State Board of Charities and Reform, the county should not only be freed from the payment of $1.50 per week into the state treasury, but should also receive from the state treasury $1.50 per week for each patient maintained in the county asylum (making a total saving of $3 per week per patient), as long as the administration of the county asylum was kept satisfactory to the State Board of Charities and Reform. If it was unsatisfactory, the state board had authority to cut off the state appropriation and also to order patients removed to other county asylums. No county was allowed to build a county asylum without the approval of the state board, and the state board had authority to transfer patients from the state hospitals for insane to county asylums at their discretion.

The county asylums are located on large farms, permitting general farming, dairying, truck gardening, fruit raising, etc., affording abundant healthful employment for both sexes. Superintendents, chosen from efficient farmers, were paid $1,000 to $1.500 per year. Medical attendance was furnished by physicians from adjacent towns.

The county insane asylum system immediately became popular. The counties found that they saved money under the new system. Friends of patients were pleased because their afflicted relatives were near home. Patients were more contented because of the smaller groups and the more natural daily life. The superintendents of the three state hospitals were pleased because they were able to transfer their less hopeful cases and reduce their population to the actual normal capacity of the hospitals, and to do hospital work under the most favorable conditions. The writer, having visited Wisconsin county asylums at intervals during the past twenty-five years, and having canvassed the matter with superintendents of state hospitals, members of the state board of charities and the state board of control, county officials and physicians in private practice, and patients in the county asylums, can testify that the Wisconsin county system is held in general favor in Wisconsin, and that, under it, the patients, in his judgment, are at least as well cared for as patients of the same class in the average state hospital.

In the State of Pennsylvania there are some county asylums organized on practically the same plan as the Wisconsin county asylums. The Chester County Asylum is admirably conducted with a woman physician as superintendent. Outside of the two states of Wisconsin and Pennsylvania, there is only occasionally a county asylum, like the Cook County Asylum at Chicago, which can be considered satisfactory.

Almshouse Care of the Insane.—The keeping of insane patients in almshouses is a cruelty to the insane and the sane alike. It is impossible to provide necessary facilities for insane patients in the ordinary almshouse. They need a higher order of nurses and attendants than are found in almshouses. The insane patients are objects of fear, aversion, or ridicule to the sane patients, and it is impossible to give them the degree of liberty essential to their comfort, happiness, and physical welfare. It is usual to find an undue amount of restraint exercised upon troublesome insane patients in almshouses. At the same time it is extremely difficult to secure for insane women the protection their helpless condition demands in an institution where vicious and irresponsible men are at large.

Voluntary Commitment to Hospitals for Insane.—Many persons on the verge of insanity or of a nervous breakdown would gladly avail themselves of the privileges of a hospital for the insane, with its expert physicians and trained nurses, were it not for the odium which most unjustly attaches to persons who have been inmates of such a hospital. Several states have passed laws permitting individuals to enter hospitals for the insane on their own motion, by permission of the superintendent, with an agreement to submit to the necessary discipline in consideration of the privileges enjoyed.

What is needed is the establishment of state sanitariums for the treatment of persons suffering from diseases of the brain or the nervous system, which patients may enter either on their own request or that of friends, without the necessity of a court examination and finding of insanity. It should be possible for such persons to be admitted, treated, and discharged without any record being made that would reflect upon the integrity of their mental condition.

In the city of New York there has just been organized an Association for the Prevention of Insanity. It is expected that one of its first undertakings will be to secure the establishment of institutions not associated with any hospital for the insane, in which neurasthenic patients may secure adequate preventive treatment.

THE CARE OF EPILEPTICS

The epileptic appeals peculiarly to the sympathy of the community. His disease, "the falling sickness," is but little understood. Physicians disagree as to whether it has its seat in the brain, the spinal cord, or the nervous system. No specific treatment avails. The only helpful treatment is found in suitable diet, regulation of habits, congenial surroundings, proper recreation, and carefully selected employment. The disease is progressive, usually accompanied by gradual deterioration of physical and mental powers, and probably not more than ten per cent recover. The character of the disease exposes the patient to physical injury in his paroxysm, and most epileptics are dangerous to others. Many people have been killed or injured by epileptics.

The epileptic is debarred from any ordinary employment. He cannot serve on a railway, he cannot safely engage in building or house painting or the management of machinery. He cannot be employed as a salesman or in other employment where his paroxysms would frighten or annoy bystanders. He is not insane or feeble-minded in the early stage of his disease, and it is a cruelty to both classes to confine him in an institution for the insane or feeble-minded. Nevertheless thousands of epileptic patients are sent to institutions for the insane and feeble-minded for lack of other provision. Nearly every state in the Union has already under care in such institutions a sufficient number of epileptic patients to populate an institution for their exclusive care, at the same time making room in those institutions for patients who legitimately belong to them. Colonies for epileptics have been established in the states of Ohio, New York, and elsewhere. In these colonies epileptic patients are safely and comfortably provided for, and it is found that, like the adult feeble-minded, they can be made very largely self-supporting, with benefit to themselves. Epileptic colonies have been proposed in a number of states, and it is probable that, within a few years, separate public care for epileptics will be generally adopted. This seems the more reasonable because it can be begun without any immediate increase in the present dependent population, by the transfer of epileptic patients from the institutions where they now are.

Suitable care for epileptics is important as a social measure, because it is now recognized that a very large proportion of the offspring of epileptic parents are epileptic, feeble-minded, or otherwise defective.

INSTITUTIONS FOR THE FEEBLE-MINDED

It is estimated that the number of feeble-minded people in the United States is about equal to the number of insane persons, namely, 150,000. While a portion of the feeble-minded may be safely kept in their own homes under the care of relatives, it appears that at least one half of them, and probably a larger portion, ought to be under public care, not only for their own safety and happiness, but also for the protection of the community at large. There are now under care in institutions for the insane in the United States about 150,000 patients. If public provision were to be made for one half of the feeble-minded persons in the community, that would mean approximately 75,000 feeble-minded persons. As a matter of fact the institutional provision for feeble-minded persons in the United States does not much exceed 15,000.

Public provision for the feeble-minded in the United States dates back about forty years. The first institution for feeble-minded children in this country was the Massachusetts School for the Feeble-minded, founded by Dr. S. G. Howe in 1848.

The original conception of these institutions was that of a school for children. It was believed that children of imperfect mental development might have their dormant powers developed by skillful training, which should last longer than the ordinary school period, and that such children might thus be fitted to return to their homes and become independent members of society. These expectations were disappointed. Experience proved that only a small proportion of these boys and girls could take care of themselves. Many of those, who were sent out experimentally, soon came back to the institution, unable to endure the competition of the ordinary life. These children grew up in the institutions, and it became necessary to provide custodial care for them. Experience proved also that the welfare of the community positively demands the custodial care of all feeble-minded girls during the child-bearing age. Such studies as that of Mr. Dugdale on *The Juke Family*, Rev. Oscar McCulloch on *The Tribe of Ishmael*, and Mr. Ernest Bicknell on *Feeble-Mindedness as an Inheritance*, demonstrated that the chief source of feeble-mindedness with its entailed burdens of pauperism, prostitution, vice, and crime is found in the unprotected, feeble-minded girl. As a result, separate institutions for feeble-minded women have been built in the states of New York and New Jersey. At the same time they are able to contribute by their labor to their own support so as to reduce the cash expenditure to less than $100 annually per capita. Institutions for young women of this class are maintained by the states of New York and New Jersey. Provision for the custodial care of such girls is made in connection with schools for younger feeble-minded children in several states. No state in the Union, however, has yet made adequate provision for all of the girls of this class. Purely from an economic standpoint such provision would return to the state much more than its cost. Farm colonies for feeble-minded adults have been established in connection with institutions for feeble-minded children in many states. It is beginning to be recognized that if it is impossible to provide institutional care for all of the feebleminded population, wisdom demands that provision shall first be made for this class in order to check this growing burden at its source.

Schools for feeble-minded children provide such intellectual, physical, industrial, and moral training as they are able to receive, together with such recreations as render happy the lives of these innocent children, and contribute at the same time to their development. While the trend of the times is in favor of the use of family homes in preference to institutions for normal children, it is almost universally agreed that the feeble-minded child can, in most cases, be more happily, safely, and economically maintained in an institution than in a private family. It has been discovered also that the older feeble-minded persons can be made nearly self-supporting in farm colonies, under a wise administration, and at the same time can enjoy a high degree of happiness and comfort.

In no form of social service is there found a more beautiful and unselfish devotion than among those whose lives are given to the care of feeble-minded children.

THE CRIPPLED AND DEFORMED

Institutions for the care of crippled and deformed children have existed for many years in the United States. An admirable example is The Home for Ruptured and Crippled in New York. In recent years there has been a rapid growth of such institutions. They are of two classes: hospitals for orthopedic treatment and asylums for the care of those who are permanently crippled, or for the care of those who are convalescent. Some confusion has arisen because some of the hospitals are called "Homes"; for example, the Home for the Ruptured and Crippled in New York and the Home for Destitute Crippled Children in Chicago. It would be better if the two classes of institutions were more clearly distinguished. As a rule, the hospitals for crippled children are intended to secure to the child his surgical opportunity, and the effort is made to send out the children as early as possible in order to make place for others on the waiting list.

Hospitals for Cripples.—Orthopedic surgery has made rapid strides within the past few years, resulting in the cure of many cases which were formerly considered hopeless. Of necessity such hospitals are located in large cities where orthopedic surgeons are available and where means can be found for the erection and maintenance of hospitals, which are necessarily expensive. Through the numerous philanthropic agencies it is comparatively easy to obtain orthopedic treatment for city children, however poor; but it is very difficult to secure such treatment for poor children who live in the country, far from centers of population. Their parents have neither the financial means nor the knowledge to avail themselves of surgeons and hospitals, and many curable cases are left to degenerate into permanent cripples for lack of such care. The State of Minnesota, in 1897, made an appropriation for the treatment of crippled children from all parts of the state. The work was organized under the leadership of Dr. Arthur B. Gillette, an eminent orthopedist. For several years it was made auxiliary to the St. Paul City and County Hospital, but the work proved so successful and so valuable that the legislature of 1909 made appropriation for the erection of permanent buildings. Through this legislation orthopedic treatment has been made available for crippled children throughout the entire State of Minnesota; and many children, who would otherwise have become a permanent public burden, are being developed into self-supporting citizens.

Asylums for Cripples and Deformed Children.—The work of the hospitals for crippled children has accented the need of the incurable cripple. Many cripples suffer sadly for lack of suitable care. The lot of such persons in homes of poverty and in almshouses is pitiable. As a result asylums for the care of such children are being rapidly instituted in the larger cities. Most of these asylums leave the surgical treatment of such patients to the orthopedic hospitals for cripples or to the general hospitals, preferring to deal with them after they have had their surgical opportunity, though some institutions, like the Widener Memorial at Philadelphia, combine the functions of hospital and asylum. In practice it is found that the asylum work cannot be separated from the surgical work. Practically all crippled children demand more or less surgical care. Braces must be readjusted, plaster casts must be renewed, old wounds reopen, and disease presents new factors. Expert surgical advice is indispensable, and that fact necessitates the location of the asylum where it will be conveniently accessible.

The most notable asylum for crippled children in the United States is the Massachusetts State Hospital School at Canton, near Boston. This school already provides for 150 children and is to be enlarged to a capacity of 300. The buildings are simple, but admirably adapted to their purpose. Schools of letters and schools for industrial training are in operation. There is an excellent convalescent home for crippled children at White Plains, N. Y., auxiliary to The New York Orthopædic Dispensary and Hospital.

The most important and pressing problem of these institutions is that of such vocational training as will enable the children to maintain themselves by industry without becoming actual or apparent beggars. This problem is now being carefully studied.

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XVIII. AGRICULTURE AND FORESTRY

WILLET M. HAYS[1]

THE ORGANIZATION OF AGRICULTURE

[An account of agriculture and forestry made at this time gives opportunity for a general review and a forecast of prospective developments. Since many of the statistical estimates of the United States Department of Agriculture will be revised in 1911 from the figures of the thirteenth census, it seems wiser for the most part to defer presenting many statistical tables until the new census gives a new basis.]

In the year 1910 the high cost of food has directed the attention of people in nonagricultural pursuits to the paramount importance of the productivity of the soil, while the housekeeper, the business man, and the economist have been brought clearly to realize that the world must adapt itself to more expensive food products. The steady movement away from the land so as to secure the high prices paid in nonagricultural pursuits and to have the advantages of the city has practically reached its limit. Whereas two or three generations ago two thirds of the total population were on the farm, to-day the figures are reversed, and two thirds are off the farm. The present high prices for agricultural products would indicate that the proportion left on the farm cannot run much lower. While there are yet some new lands to be subdued, while machinery will be still further perfected so as to reduce hand labor, while methods of farm management will be greatly improved, and while economic plants and domestic animals will be improved by breeding so as to yield a larger and more economic product, yet, on the other hand, advancement in nonagricultural vocations will also there greatly increase the production per worker, providing these classes with more to give in exchange for food and other products of the farm. People will flock to that calling which offers the largest remuneration, but it is not likely that less than one fourth of the whole people will be permanently required to bring forth the raw products of food and clothing from the soil. The proportions on and off the farm have nearly reached the point where they will remain static.

Agricultural Organization. — Wonderful progress is being made in developing agricultural institutions for research and education, and associations designed to foster particular country-life interests. Suggestions for an all-round organization of agricultural affairs have arisen during the last few years. While the great body of work in advancement will be done in definite institutions, yet there is a rising call for team work among all agencies striving to better country life. Such organization is needed to look after some of the wider interests of the open country. On the other hand, local organizations are being multiplied and strengthened.

During the last few years a large number of coöperative enterprises have been established. These include increased numbers of coöperative creameries, cheese factories, coöperations for marketing grains, fruit, and produce, for providing insurance, for breeding animals, and also coöperation of the national and state agricultural institutions with the farmers. An organization has been suggested to develop the laws relating to coöperations as distinguished from the law of corporations. Suggestions have been made that the public auditing now given to banks and to insurance companies should be given also to coöperative creameries, coöperative stores, coöperative fruit-selling organizations, and to similar forms of coöperation, thus to encourage these institutions.

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[1] Assisted by William F. Harding.

Agricultural Research. — Probably $50,000,000 has been spent in this country for research in agriculture. Federal and state legislative bodies are increasing the grants for this purpose. Approximately $10,000,000 annually of public money is now spent for research in agriculture and home economics. The United States Department of Agriculture is recognized as the greatest research institution in the world. The state experiment stations are gaining a strong grasp on the local problems of their respective states, while the United States Department of Agriculture is in a vital way taking hold of the larger and interstate problems.

Congress by act of May 26, 1910, appropriated $12,767,636 for the Department of Agriculture for the present fiscal year (ending June 30, 1911), compared with $12,275,036 for the preceding year. In addition there is a permanent appropriation of $3,000,000 for meat inspection and an allotment of $460,000 for the department's printing, besides $720,000 intrusted to the department for distribution to state experimental stations under the Hatch act. Stations wholly or partially maintained by Federal funds expended in all $3,053,446.90 in the fiscal year 1909, the United States contributing $1,248,000 of this. Additions to their equipment were made to the value of $744,561.93.

Education for Country Life.—Our public educational system has finally begun to take up the education of all people who are to be engaged in agricultural production, or in technical lines related specifically to agriculture. The people generally are coming to see that agricultural education is a large project requiring financing and organization. The vocational education of 6,000,000 farm managers and 6,000,000 managers of farm homes is looming up as an undertaking calling for national and state coöperation. During the year vocational education has been widely discussed in educational circles, but especially by business men, economists, and legislators. To take selected portions of the vast body of knowledge derived from agricultural research to all our farmers and farm youth is seen to be both a necessary and an expensive matter. The necessity has been emphasized by James J. Hill and others, who have shown that in two or three generations we shall need to feed double the present population. We can add fifty per cent to our cultivated acreage, and to double the product on this larger area we must add about fifty per cent to the yield per acre. There is thus involved in better plans for farming, in better execution of these plans, in better machinery, and in better plants and animals, the production of several additional billions of farm products.

The year has shown a tendency to reduce the quantity of our agricultural exports. Our balance of trade is very useful to us in keeping our financial status in a stable form. We could afford even much larger expenses for public agricultural work than now, if for no other purpose than to sustain our balance in foreign trade.

The Graduate Agricultural School.—At the apex of the system of education for American country life we have the graduate agricultural school. This school, dealing with methods of education and with research, is open only to graduates of agricultural colleges. Most of its students are assistants and leaders in agricultural college and experiment station work. It is supported by the Association of Agricultural Colleges and Experiment Stations, assisted by the United States Department of Agriculture. Its 1910 session had 205 students.

Agricultural Colleges and High Schools.—The sixty-five agricultural colleges enrolled, for the year 1909, 1,107 graduate students including those in engineering courses, 6,822 undergraduates in agricultural courses, 7,059 in special and short courses in agriculture, and 197 in teachers' courses in agriculture. There are fifty-eight agricultural high schools receiving state aid, two entirely on private foundations, and twenty-eight general high schools receiving state aid for teaching agriculture. Besides pupils in high schools, there are a large number in agricultural classes in secondary courses of common schools. Agricultural education is rapidly growing in number of students and in popular favor.

Consolidated Rural Schools.—There are now something over 1,000 typical consolidated rural schools; that is, schools to which the pupils are hauled from a distance as great as it is practicable to haul the children, each school district covering an area approximately five miles square. Approximately 200 consolidated rural schools were organized in 1910. There are also probably 3,000 partially consolidated rural schools in which less than half a dozen schools covering less than twenty-five square miles are consolidated into a single school. Since three fourths of the work of vocational education in agriculture must be done in local schools, it would seem that the consolidation of the one-district, one-room schools into five-room institutions, large enough to employ a teacher of agriculture and a teacher of home economics as principal and assistant principal, is the most urgently needed new development in country-life education. The rapid increase of rural-school consolidation for the year has caused those who have most information in the matter to estimate that eventually two thirds of the approximately 300,000 one-room rural schools of America will be consolidated.

College and Department Extension Work.—Next to the consolidated rural school, the most important new developments in country-life education are extension organizations in the United States Department of Agriculture, in state departments of agriculture, and in the state college of each state. Considerably more than $1,000,000 is expended by these organizations. A large part of this money is used under the auspices of the United States Department of Agriculture, coöperating with the colleges of agriculture in many states and with private organizations. Under one form of this work, called demonstration farming, general agents, state agents, district agents, and county agents are organized into a force of teachers and inspectors to induce thousands of farmers to plant limited areas of their farms to crops under plans supplied by the officers of the government or state. During the year farmers' institute meetings are held on these experiment fields.

The better plowing, the more intelligent use of fertilizers, the better seeds, and the superior cultivation prescribed by the farm demonstration agents result in the demonstration farmer showing himself and his neighbors how to materially increase production per acre and per worker. Often this increase is fifty, one hundred, and even two hundred per cent. This work is mainly centered in the South as yet, and, though only a few years have elapsed since its inauguration, it is having an enormous influence on the gross production of these states.

A report of the farm demonstration work of Dr. Knapp, for example, in teaching the southern farmers how not only to grow more cotton, but also to grow more diversified crops, reads like a romance. The fact that the average farm is producing hardly two thirds as much as it ought, and that many farms are producing less than one half what they ought, has given departments and schools of agriculture a most wonderful opportunity to be of material benefit to the country. The states and colleges of agriculture are rapidly increasing their expenditures for farmers' institutes, itinerant schools, correspondence courses, short courses, and other established forms of extension instruction for adult farmers and farmers' wives. It is estimated that the (approximately) $20,000,000 spent on agricultural education and research in the United States are increasing production at least $400,000,000, one dollar producing an additional return of twenty dollars.

The Rising Body of Knowledge.—Rough estimates place the amount of money already expended in agricultural research in America at $50,000,000. The states, as well as the general government, are yearly increasing the expenditure for this work.

Since expenditures along this line are being rather rapidly increased, it is safe to say that within a generation or so the total sum thus expended will have been increased to half a billion. It is admitted that the knowledge already accumulated, a small part of which has been put in pedagogical form and is being introduced into our school system, is having a profound effect on agriculture and on country life. The farmers have changed from their attitude of sneering at science in farming, and are very rapidly coming to a high appreciation of the value of technical knowledge in farm production, farm home making, and rural affairs generally. Great advances have been made in methods of research in the last quarter of a century, and a body of men trained in research is being rapidly developed. The enlargement of agricultural colleges, the multiplication of agricultural high schools, and of consolidated rural schools large enough to have departments of agricultural instruction, is resulting in the education of a body of men and women trained to teach agriculture and home making.

Development of Pedagogical Methods. — Educators are blocking out courses of study in agriculture and home economics for schools of all grades. Text-books are being provided in the subjects of farm management, horticulture, live-stock production, dairying, and home making. Besides the text to be studied, these books contain directions for demonstrations to be given by the teacher and practice work to be carried out by the students. The pupils in the consolidated rural school, for instance, are to have some laboratory practice in the laboratory room. Here a ten-acre school farm will provide outdoor work also in field crops, horticulture, landscape gardening, and forestry. The technological agricultural high school has a large farm with barns, laboratories, and practice shops. The agricultural college is even more elaborately fitted out with laboratories and with splendid opportunities for library research. Many of these colleges have well-developed graduate courses, and many of those students who care to be technicians can graduate into the agricultural experiment stations and departments of agriculture. Here under the direction of seasoned scientists they serve apprenticeships, and eventually many of them gain positions where they can carry forward researches. Those who are most successful often gain the leadership of groups of men engaged in a given line of research. There is no other line of education in this country which leads such a large number forward from a public-school system into a public technical service toward which the education is directed.

It is found also that with a relatively small amount of public money the backward farm manager can receive instruction which will result in his greatly improving the quality and quantity of his products. The marked effect of demonstration farming in the South, supported in part by public and in part by private funds, is the most encouraging line of extension work.

Development of Agricultural Books. —The year 1910, in common with the years of the past decade, has seen substantial development in agricultural literature. Books which were impossible on some subjects a decade ago are now being produced. For example, not many years ago no one had wrought out a successful outline of the subject of farm management; plant breeding was then but very crudely presented in bulletins, where now text-books are being prepared. The accumulations of knowledge in such subjects as entomology and the diseases of plants are so extensive that only the more general facts can be assembled in a manual or in a text-book.

Growth of Agricultural Periodicals. —Never before did our agricultural periodicals have such growth. Our 468 agricultural papers have an aggregate subscription list probably quite equal to the whole number of farmers in the United States, numbering between 6,000,000 and 7,000,000. A very great improvement is observed in the quality and value of the technical and general information carried to the farmers by these publications. While the experiment stations and departments of agriculture are the main reservoir from which these periodicals secure their data, yet the farmers themselves are supplying a much more definite line of information in articles and correspondence than they did to these publications a decade or two ago. Every farmer's interest, every class of live stock, every class of plants, and every manufacture using agricultural products has its class periodicals. The aggregate sum of money received for advertising by these papers amounts to many millions annually, and the advertising pages of these periodicals no less than the editorial pages carry most valuable information to all of the farmers of the land. With the development of agricultural schools and colleges, the editorial chairs of these papers are being filled with men trained in agricultural technic and in agricultural economics. The women of the farm also are taking a prominent part in these papers, and the pages devoted to the farm home, to farm youth, and to rural sociology, have an aggregate influence which is very large.

FARM MANAGEMENT

The fact that we have practically no more new lands, and that our urban population is increasing rapidly while the increase of our farm production is relatively somewhat reduced, has resulted in high-priced foods. The proportion of population has become unbalanced, with not enough people growing food to keep the price low. Our nonagricultural population will increase in numbers and in purchasing power per capita. They will be ready and able to buy farm products at relatively high prices. Those who own lands see and realize these facts; consequently the price of land in the United States has very greatly increased within the last decade. Farm lands have increased between 1900 and 1910 probably fifty to seventy-five per cent in price. Farm labor has also become much higher in price, as have also other things which enter into the cost of producing the raw materials of food and clothing.

Since it seems likely that farm lands will continue to increase in price, the interest charge as an item in the cost of producing foods promises to remain permanently higher than formerly. Since nonagricultural industries are growing rapidly and are anxious for labor even at high prices, it seems certain that agricultural labor will continue to command good wages, thus making higher labor charges in the production of farm products. The products which the farm purchases are increasing greatly in quantity, as our farmers are constantly demanding better living and better equipment on their farms. On the other hand, better scientific methods of farming, improved machinery, and plants and animals with heredity made better by breeding, are tending to keep the cost of farm products from rising. On the whole, the general industrial and financial situation warrants the hope that agricultural production has reached a permanent basis of better remuneration than during the last third of the nineteenth century.

Climate.—Taken in its entirety as related to the total production of the United States and of the world, the factor of climate is rather constant in the making of farm products. However, when applied to any one crop grown on a large and widely distributed area, as wheat or corn or cotton, climate as a factor varies materially from year to year. Thus, we have fluctuation of approximately twenty per cent in the yield of these great crops; and in case of crops grown on a more limited area, as flax, grown mainly in Minnesota and the Dakotas, or hemp, grown mainly in a few counties in Kentucky, climate as a factor in the annual product produces an even greater variation than that named.

The rate of advancement of prices of farm products has been recently accentuated by a period of marked drouth in the semiarid regions in the West. The shortage of crops in that region this season is sharply bringing home the fact that we cannot hope for a rapid increase of production beyond our present "dry-land" frontier. Increase in production must henceforth come largely from increasing the acreage annually under cultivation in regions already settled and from increasing the yield per acre. In the semiarid region, periods of rainfall and periods of drouth, each irregular as to number of years, may be expected to alternate as in the past.

Irrigation extended so as to utilize the streams of the mountains and the water which may be pumped from subterranean sources, including flood water which may be impounded, will continue to bring increasing acreages under large production per acre. But these acreages will not increase very rapidly, as compared with our whole agricultural area, and, even when all the water is used which may be made available, they will represent but a very small fraction of the semiarid region. Other large areas are being gradually brought under cultivation by reclaiming swamp lands, especially those large areas near our great rivers and along the Atlantic Coast and on the coast of the Gulf of Mexico. Moreover, considerable areas of land now in timber in the humid regions of the United States are sure to be cleared of timber and used for agricultural purposes. Owners will prefer to take off the timber from land worth $50 to $200 per acre and grow corn, cotton, alfalfa, and other high-paying crops. They will probably insist that the Federal Government and the states should promote the production of forest products on mountainous and other lands on which there is not so much interest charge as on lands suitable for the production of high-priced field and horticultural crops. Those desiring rich lands to farm are looking to the richer soils which still bear trees in the humid regions from the 100th meridian to the Atlantic Ocean. If this movement gains large headway it will be another most powerful argument for the conservation of forests on lands which nature designed to remain as forest lands.

Soils.—The threatened high cost of living, the enhanced prices of farm lands, the general development of agricultural education, and the special activity in researches in soils and fertilizers have combined to center a great interest in the soils of our farms. Such authorities as Pres. Hill, of the Great Northern Railway, and Pres. Brown, of the New York Central Railway, have clearly emphasized the fact that we must increase our productive acreage, and that we must greatly increase the product per acre. Our wheat yields fifteen bushels per acre where it should yield twenty-five bushels per acre. Likewise cotton, which yields two fifths of a bale, should be made to average nearly a bale.

Farm Organization. — During the past few years investigations in the reorganization of farms, in devising methods of farm accounting, and in teaching farm management, have made great headway. It is not too much to say that the subjects of farm reorganization and farm management can now be successfully introduced to follow arithmetic in the elementary school, and be highly developed in the agricultural high school, with strong technical collegiate courses in our state colleges of agriculture. Once this line of education is put into effective pedagogical form, it will pay to introduce it as a study not only in all agricultural colleges and in all high schools where pupils from the farm attend, but also in all elementary rural schools, even including the one-room district school. It is not sufficient that a relatively few men be highly trained to manage large estates, nor that even a sufficient number of men be trained to conduct demonstration farming and itinerant agricultural schools. Since nearly all our 6,000,000 or 7,000,000 farms are managed by their owners, the problem of teaching farm management must reach the entire number, else some farms will be badly managed.

Cropping Schemes. — The United States Department of Agriculture, state experiment stations, and similar institutions in foreign countries are slowly but surely devising schemes of cropping and carrying them out in comparison side by side so that the best schemes will be shown to the farmers. This research work is developing a group of men highly expert in such investigations. Teachers of farm management are utilizing the knowledge gained from these formal experiments, and also knowledge gained from investigating the methods of those farmers who best succeed. These two classes of accumulated knowledge are being organized into text-book and other pedagogical forms suited to use in schools and in the form of bulletins and manuals for use by farmers generally.

Fertilizers. — During recent years discussions have arisen as to basic theories of soil fertility. One school of soil specialists emphasizes the contention that not only an absence of mineral-plant food, but also other factors until recently not considered, often control the productivity of a given soil for a given crop or crops in general. Those who adhere to the older point of view are emphatic in their teaching that many of our soils are being depleted of certain elements of plant food, and that the emphasis of soil investigations should be directed to the conservation of mineral elements which may be depleted in given soils. Whatever may be the outcome of the discussion, it is certain that the soil is becoming a much broader field for investigation than before. Study has been directed toward the forms of the organic matter in the soil. The importance of these studies has been especially emphasized by the discovery of certain organic compounds in the soils poisonous to some crops. Thus, for example, wheat leaves in the soil substances toxic to wheat. On the other hand, investigations concerning those leguminous crops which bring atmospheric nitrogen into the soil have emphasized the importance of the clovers and their relatives. And investigations into the needs of many soils for mineral fertilizers has called new attention to the need of conserving the deposits of phosphorus-bearing rocks and of mineral sources of potash. The need of efforts to lessen the erosion of the soil from the fields has also been greatly emphasized.

Much significance is attached to the fact that in Europe and Asia where the soils have been constantly used for hundreds and even thousands of years, they have not worn out, though often in a condition of low productivity; and, on the other hand, some of these old soils are quite as productive as newer soils. These discussions are not so important from the standpoint of conclusions already reached as from the standpoint of placing these soil conservation and fertility subjects where they surely will be investigated until the leading facts are so well known as to be no longer under serious dispute.

Marketing.—During 1910 the movement among farmers to perfect their methods of marketing products has made material advances. The continued successful marketing of dairy products through the coöperative creameries of Minnesota and other states, the wonderful organization which sends train loads of citrus fruits from California to the city markets of the entire country, and the more local organizations for marketing truck crops in Virginia and other states are among the most prominent examples of the growth of the coöperative movement among producers of farm products. The high prices of 1910 tend to increase the desire of both producers and consumers of farm products to find less expensive methods of taking these products from the farm to the consumer. By a system of "diversion in transit," consignments of fresh fruits and vegetables are being distributed among the principal markets more in proportion to their immediate needs than formerly.

Crop Reporting.—The crop reporting system of the United States Department of Agriculture has been supplemented during the year by the reports of the International Institute of Agriculture at Rome, which has organized a crop reporting service similar to that at Washington, but taking into consideration world areas or world crops. Nearly all the countries of the world are now coöperating with the International Institute of Agriculture in crop reporting, and those in charge of that work express the belief that it will be able to devise methods which will still further facilitate the marketing of farm products.

Financing.—There is a widespread feeling that with the rise in prices of farm lands a larger and larger proportion of our acreage is going into the hands of the commercial owner or landlord. This means that the people who work the land must give a portion of the income to others who have invested their money in the farms. It is generally recognized that, excepting for a limited number of large farms, it is better for the farmers and for the country as a whole to have the land divided into such family-sized farms as the owner can manage with his own labor and with the labor of members of his family, with only occasional hired help. Those who favor the introduction of vocational education in the schools of all rural communities agree that this is the most important means of retaining the small farm. If every man is trained to manage a farm and every country woman is trained to manage a farm home the farmers will pay more for the land than would the commercial owner, that they may combine the development of an independent home with the business of farming. There is no serious difficulty in producing enough wealth on the land to enable those who do the work to own the soil, unless they must pay an undue proportion to outside owners.

CROPS

The gross product of our field, horticultural and garden crops, has come to above a billion dollars annually. In addition to this we harvest forest crops amounting to about $1,250,000,000 annually. Prices on the whole for all plant products have gradually risen until they have been produced at a reasonable profit by farmers, and until consumers have had to pay, including distribution charges, prices which seem unduly high. Our great staples, as corn, wheat, and cotton, which are constantly in competition with each other and with the less important crops, have their share of our nearly 500,000,000 acres of cultivated land. The area of the corn crop has been stimulated by high cash prices for corn and by high prices for livestock products into which most of our corn crop is transformed on the farm. In the case of wheat, areas of new lands adapted to it in this and other countries have so rapidly expanded the total wheat areas that the price of wheat in the world's markets has of late been relatively lower than that of corn. Our other crops are crowding the wheat acreage down in the older sections of the country; but during the past year or two the consuming world seems to be going ahead of production and higher prices are again causing wheat to compete for larger acreages.

The United States seems on the verge of changing from a wheat-exporting country to a wheat-importing country. Only by somewhat increasing our yield per acre, and especially by immediately increasing our acreage, can we hope to continue to supply sufficient wheat for the tables of our American families.

Cotton.—In case of cotton the boll weevil has materially reduced the acreage of a number of states and threatens to continue throughout practically the entire fourteen cotton-producing states. It has now entered Mississippi and is already in several counties in southwestern Alabama. It seems to be rather exceeding its ordinary progress of fifty miles per annum. The government, the states, and private parties are making most vigorous efforts to enable cotton farmers to grow cotton in spite of this insect pest, and also to grow in rotation with cotton such crops as corn, forage, and other products which will both themselves pay and place the land in better condition for the cotton in alternate years. The restriction of the cotton acreage in parts of the United States, the partial failure of experiments in other subtemperate zones, as in Africa and Asia, to greatly increase the world's product of this fiber, the rapidly growing demand for cotton throughout the entire world, have resulted in remunerative prices for cotton fiber. And the conditions which warrant higher prices for these great staple crops warrant higher prices for the crops which compete with them for acreages of the country's farmed area.

Alfalfa, with its unusually high value of field-crop product per acre; orchards of apples, citrus fruits, plums, peaches, etc., with their very high yields of value per acre, are competing for larger and larger acreages. Flax, oats, and even barley have commanded higher prices than earlier in the decade, and they, too, are able to hold their own in competition for land to grow on.

It would seem that the tendency has already begun to rather reduce the acreages of the cheaper forage crops which are condensed into live-stock products, as our pasturage and hay crops, and devote these lands more to grains, fruits, and vegetables which become at once human foods without first passing through animals. In other words, it may be we have reached a period when the acreage devoted to live-stock production will be gradually reduced, as compared with those crops which serve directly as human food, as has been the case in China and some other countries, where it is not so much a question of the deliciousness of the food nor of its value per pound, as it is of the amount of people who can be fed from a square mile or an acre.

It would seem also that cotton would still continue to crowd out those crops which are turned into wool, as an acre of cotton will go further toward producing clothing than an acre of forage and grain converted into wool. It is also true that when our soils are so handled as to be highly productive, the average acre can be made to produce nearly or quite double the amount of cotton now grown; and, also, by means of soiling crops, together with careful fertilization and crop rotation, the product per acre of wool can also be doubled. As a matter of fact, the amount which we can increase our crops is limited only, one might almost say, by the capacity of man to know how best to farm. Here again the most potent influence in increasing the average efficiency of the individual farmer is public vocational education.

Breeding.—Breeding is one of the most important agencies both in increasing the profits of the farm and in reducing the cost of food and clothing to consumers. If each dollar of public or private money invested in creative breeding will increase the products of our fields by $100 or even $10, this is a means of greatly cheapening the product. Many efforts at improving corn, wheat, cotton, flax, and other staple crops show that by breeding the seeds of these crops can be so improved that yields will be increased ten or even twenty per cent on the average. It is asserted by specialists that at least $3,000,000,000 worth of our plant products can be thus improved so as to yield at least ten per cent more value. These same specialists make similar assertion concerning $2,000,000,000 worth of our animal products. Ten per cent of $5,000,000,000 is $500,000,000. If this addition to our farm products can be secured at a cost of several million dollars to the nation, states and farmers, the national profit would be indeed very large.

INCREASES OF AVERAGE YIELDS OF CROPS PER ACRE

Average Yield Per Acre of Wheat, Corn, Oats, Barley, Rye, Buckwheat, Potatoes, Hay, and Cotton. Averages of 5-Year Periods since 1880.

Figures by Nat. C. Murray, Bureau of Statistics, Department of Agriculture.

	Corn.	Wheat.	Oats.	Barley.	Rye.	Buckwheat.	Potatoes.	Hay.	Cotton.
	Bu.	Bu.	Bu.	Bu.	Bu.	Bu.	Bu.	Tons.	Lbs.
1880–84......	23.9	12.3	26.5	22.3	12.6	12.7	80.0	1.23	167.7
1885–89......	24.4	13.8	26.6	21.8	11.4	13.3	73.0	1.17	171.2
1890–94......	22.5	12.9	24.2	22.4	13.2	15.0	68.8	1.21	182.4
1895–99......	25.7	13.4	28.2	24.3	14.8	18.7	84.0	1.35	172.9
1900–05......	24.2	13.4	30.1	25.7	15.6	17.7	85.5	1.42	186.3
1906–09......	27.3	14.8	28.8	25.7	16.4	19.3	95.4	1.46	183.2
Year 1910, Preliminary...	....	14.2	31.9	22.4	16.3	......	....	1.34	....

By multiplying these yields by the average price of each crop respectively, and taking an average of all for each five-year period, there is shown the most encouraging fact that our staple crops have increased in yield per acre in the past thirty years about seventeen per cent. Broadly speaking, this represents $500,000,000 annually, due to better plants and better soil culture.

Scientific investigation into the theory of heredity and methods of breeding is resulting in the rapid development of methods of finding the very few plants in a variety which, when multiplied, result in strains or varieties more valuable than the foundation stock out of which these few plants were selected. Profound improvements have been made in the yield of varieties of corn used in the great corn states. No doubt the aggregate increase in yields from improvements in seed corn is beginning to add some bushels per acre to the average product of the entire country. Breeders of apples have found single trees which, when multiplied by grafts, have proven to be large bearers of this king of fruits in regions where before apples did not do well. Other breeders have found single plants of wheat or of flax the seeds of which, when multiplied added ten, twenty, or even twenty-five per cent to the yields of these crops. Some states are already able to count improvements made by plant breeding at their experiment stations in the terms of tens of millions of dollars annually, and 1910 has seen this work only begun.

Yields.—The following tabular statement shows the latest statistics of the yields of farm products and the relation of these to former yields.

PRODUCTION, 1910 (*Preliminary Estimate*),

Compared with 1909 and 5-Year Period 1905–1909.

	1910.	1909.	Annual Average, 1905–1909.
Corn . . . . Bu.	3,121,381,000	2,772,376,000	2,733,751,000
Wheat . . . . “	691,761,000	737,189,000	692,824,000
Oats . . . . “	1,096,396,000	1,007,353,000	897,415,000
Barley . . . . “	158,138,000	170,284,000	161,241,000
Rye . . . . “	32,088,000	32,239,000	31,503,000
Buckwheat . . . . “	. . . .	17,438,000	15,366,000
Potatoes . . . . “	328,787,000	376,537,000	304,513,000
Hay . . . . Tons	60,116,000	64,938,000	63,418,000
Tobacco . . . . Lbs.	967,150,000	949,357,000	736,201,000

Seeds.—The business of seed growing and seed merchandising is increasing in volume and developing in technic. Farmers are beginning to buy those crops which yield most value per acre in the experiment station plots as compared with other varieties. This necessitates that the seed merchants increase the testing of varieties on their own grounds, and that they utilize the tests made by public trial stations, that they may offer for sale those kinds of field crops, fruits, and garden crops which in the end yield the largest profit to the grower and best supply the consumer products of a high quality at a reasonable cost. A larger number of permanent stations for testing varieties will have a very large influence in enabling growers to secure those varieties which will materially increase their products per acre.

Weeds.—As long as the farmers of the United States were expanding their areas under the plow that they might secure the increase in the prices of large acreages of land, the farming was done in a rather broad way which allowed the multiplication of weeds. Hand work and refined methods such as are possible in Europe and Asia, where labor is cheap, could not be afforded. On the other hand, farmers underestimated the injury to the crops in their field rotation succession from the presence of weeds. But the recent higher price of land, and the higher values of products, have brought the attention of farmers sharply to the fact that with higher cost of production they must also have high yields.

Never before have the farmers been so energetic to arrange their rotation of crops and their methods of cultivation so as to keep the number of weeds down to the minimum, nor has there ever been a more earnest desire to destroy the specific weeds which must be attacked not alone by the rotation scheme but individually also.

Diseases and Insects.—Modern facilities for transportation, the wide interchange of seeds between countries, the purchase of seeds from other farmers and from not too careful dealers in seeds and plants, have helped to bring to our fields not only many weeds but also diseases and insects. The year 1910 has seen more effective investigations and demonstrations in combating plant diseases and insects than ever before, and few lines of applied science are being better organized than those which deal with these problems. The spraying of fruit trees, giving us sound fruit instead of wormy apples, deformed plums, etc., and the vigorous campaign against the browntail moth and the gypsy moth in New England are examples of the latest campaigns along this line.

Our markets now are supplied with immense quantities of apples, peaches, and other fruits which have been kept free from injury by insects and plant diseases, and the market absorbs these choice products at good prices. It is clear that the nonagricultural classes will pay good prices for increasing amounts of superior farm products.

ANIMALS

While live stock has not increased as rapidly as wealth or population nor as rapidly as plant products, there has never been before such great interest in live-stock production and in live-stock improvement. The days of the very cheap production of meat, wool, and horses on the great plains are past. Henceforth, prices of live stock products will be determined by the prices at which farmers can grow the animals in the great agricultural states. This means that these products must be made from grains, roughage, and pasture products on high-priced lands. And we cannot expect again to see very cheap horses, cheap meat products, cheap wool, or cheap dairy, or poultry products. While live-stock products are very useful in the farm rotation scheme, helping to keep up the productivity of the soil, and providing wastes which serve as farm manures, the live stock cannot be produced as a side issue, and must be made to give returns for the expensive material they consume and for their care.

Horses.—In spite of the immense increase in the number of power-driven vehicles and machines, the number of horses in the United States is increasing at the rate of from 300,000 to 500,000 annually. The price per head of horses has more than doubled in a decade, and the total valuation is three times as great as ten years ago. The increase in number and value of mules is almost as great. The estimates of the United States Department of Agriculture show that we have now 21,000,000 horses and 4,000,000 mules, or a total of 25,000,000 horses and mules. Our horses and mules are worth about $2,750,000,000.

Cattle.—We have as milk cows nearly 22,000,000, and of other cattle over 47,000,000, or a total of 69,000,000 cattle. The increase here has not been nearly so marked as in horses, neither in number nor in price. Our cattle are worth nearly $1,750,000,000.

Sheep.—The number of sheep in the United States has remained almost stationary for a decade, varying several millions either side of 55,000,000. The price, on the other hand, has greatly increased from around $2 to between $3 and $4 per head, and the present valuation of sheep in the United States is about $250,000,000.

Swine.—The number of swine also has increased little, if any, during the past decade, varying several millions from 50,000,000 each year. The price, on the other hand, has increased from around $5 to around $9 per head, and the total value has increased to nearly double, and is now near $400,000,000.

Poultry.—Our poultry products have rapidly increased both in amount and in price, amounting now to $600,000,000 or $700,000,000 annually.

Feeding.—The science of feeding animals is being slowly but surely formulated by the state experiment stations and by departments of agriculture. The animal is coming more and more to be regarded as a machine; it needs definite quantities of food for simply maintaining the animal machinery and animal heat, and varying additional quantities to enable the animal to perform varying quantities of work, or to yield varying quantities of meat, milk, wool, or eggs. The conditions under which the animals of each class best operate in economic production, and the forms and combinations of food best adapted to producing maximum profits, are being determined by experimental feeding and also with much more intelligent care in practical feeding. The science or practice of animal feeding is being set forth in pedagogical form in textbooks, in manuals of instruction for farmers, and, even more effectively, in college-extension courses that reach the mature farmers engaged in the actual work of live-stock production. Some of the most scientific work being done in the United States is in connection with the ingo and outgo of food in the animal economy. The respiration apparatus at the Pennsylvania State College, for instance, built by the government at a cost of many thousand dollars, enables the experimenters to measure the excretions from the lungs and skin of the animals as well as to take note of all compounds that pass into or out of the alimentary canal.

Breeding.—The higher prices of farm animals, and the greater need of economy in making live-stock products under the conditions of high-priced land and labor, have increased interest in the subject of improved breeds and breeding. Remunerative prices received for purebred breeding stock have placed pedigreed animal-breeding establishments on a more substantial basis than ever before. Average prices received at public and private sales for animals are relatively much higher than during the period of low prices of live stock.

Led by the International Livestock Show of Chicago, shows of live stock have made wonderful progress during the past decade. Numerous state agricultural societies, with more or less state aid, have erected magnificent live-stock pavilions for showing animals, and also great ranges of splendid barns for housing these animals during the shows. Some of these shows, out of their annual income of hundreds of thousands of dollars, give tens of thousands of dollars annually in premiums for prize animals. State, district, and county agricultural societies also have been revived and greatly developed, and here the livestock feature has become more prominent than ever.

Following the lead of John Wallace, in his *Wallace's Trotting Registry*, and the dairymen in their plans for advanced registers, the movement to place the breeding of animals on the basis of records of the average value of the progeny is being extended to nearly all classes of live stock. Even the pedigrees of chickens are being broadened, to include not only lineage and fancy points of appearance, but also the average number of eggs laid by the hens of the given family or subbreed. The trap nest promises to put egg breeding on a basis nearly as scientific as the breeding of wheat and corn under the centgener or ear-to-row method.

The testing of cows is no longer confined to the best pure-bred animals, competing for places in the advanced register. The dairymen of the neighborhood or county have begun to form cow-testing associations, employing paid itinerant experts, who, with the Babcock test to determine the percentage of butter fat in the milk, are able at the end of the year to assist the farmer in determining the amount of milk and butter produced by each cow; also the feed she has consumed and the net profit. By this means not only are those cows that do not pay their board discarded, but in the future generations those animals and families of superior heredity are discovered, the progeny of which very greatly increase the average net profits from the herd.

The next logical step has also been taken by the formation of associations for recording the breeding value of the males, as shown by the average values of their progeny. Yet another step has been taken by the organization of coöperative associations called "circuit-breeding associations," for assembling the best blood of a given breed in the herds of a score or more of coöperating farmers, breeding them under the most rigid performance-record plans, and thus creating in a county or in a group of counties a new subbreed of highly efficient and highly potent blood to serve as a source of improved pure-bred stock, not only to the community and the state, but to whosoever has need in the entire country, or even to export as high-priced blooded stock.

Two of these circuit-breeding association coöperations have been organized under the auspices of the United States Department of Agriculture and the state experiment stations of Minnesota and North Dakota, coöperating in each case with an association of breeders of animals. Public funds are used to pay the salary and expenses of the scientific superintendent, who coöperates with the individual farmers in seeking out everywhere in the world the best blood of the chosen breed, and in so testing and breeding that the choicest animals may be secured for the circuit. In return for the use of public funds, the coöperating breeders bind themselves not to sell to outsiders the best of these animals, which should be kept to permanently continue building up the circuit breeding. These choicest "reserved" animals may be bought or sold among the circuit members, and animals not thus reserved can be sold to breeders outside the circuit. Once a circuit of valuable animals has been built up, it will be easy to perpetuate it. The high prices which animals thus accredited by authentic records of their performance will command will give the business permanency.

The studies of Mendel, DeVries, Bateson, and others, and the wonderful development of practical methods in plant breeding of such men as Burbank, Neilson, Zavitz, Hopkins, and Williams, have helped to excite new activity in the study of methods of animal breeding. Not only the improvement of existing breeds, which is at present a large problem, but also the introduction of breeds and species from abroad is receiving a new impetus. The possibility of making such hybrids as the cattelo, a cross between cattle and buffalo, and as the zebrule, a cross between the zebra and the horse, and the reduction of these hybrids to the status of practical breeds is also being taken up with intelligent interest. The text-books on animal breeding which, for some decades after Darwin's publications, followed the philosophy of the text-book called *Miles Stock Breeding*, is finally taking on new form. The new facts concerning plant breeding are materially modifying the philosophy of animal breeding, and this subject, like the subject of animal feeding, is beginning to take a substantial place in the pedagogics of courses of study relating to agriculture.

Dairying.—The immense home market provided by the large purchasing power of the American people has made a market for dairy products at high prices. Farmers have not cared to enter the rather irksome every-day-in-the-year duties of dairying, so as to produce an abundance of low-priced products. Thirty or forty-cent butter, and milk at seven to twelve cents per quart, are established prices in our cities. The campaign against tuberculosis and other human diseases is a considerable factor in increasing the price per quart for milk, and, on the other hand, the more wholesome milk is doubtless cheaper at present prices than were former supplies at the lower prices.

The state agricultural colleges in a number of the dairying states have special dairy classes for managers of coöperative butter-and-cheese factories, and have organized well-developed classes in home dairying for farmers' sons and daughters. Numerous states also employ itinerant instructors who instruct, advise, and coöperate with the experts and managers of coöperative and private dairies. The Federal Government and the states employ scores of scientists to investigate the production of milk, its care and transportation, and its manufacture into dairy products. In no other line of agriculture is science giving more definite and more helpful direction and assistance. The breeding of cattle, feeding for dairy production, the manufacture of dairy products for market, the transportation of these products, and even the distribution of dairy products in our great market centers are already being put on a sound basis of science and practice.

The subject of artificial butter, legally known as oleomargarine, presents an opportunity for legislative consideration. The price of butter has given a strong argument to Congress to at least carefully investigate and decide what should be the legitimate market relation of butter substitutes to actual butter.

Animal Diseases.—The veterinary profession has made wonderful strides, especially along the line of prevention of diseases. National coöperation between the Department of Agriculture and the southern states is resulting in exterminating the cattle tick in the gulf states. This will increase the cattle-raising possibilities of the South scores of millions of dollars annually. The discovery of a new serum which prevents hog cholera has inaugurated national and state coöperation in the eradication of that disease, which now causes the loss of tens of millions each year. Actual achievements in absolutely stamping out pneumonia and the foot-and-mouth disease have placed the Department of Agriculture and the state live-stock sanitary organizations in a position of most powerful leadership in preventing the entrance of animal diseases from foreign countries as well as in eradicating diseases which already exist, even in cases of tuberculosis in cattle. Special progress is being made toward the gradual reduction of this most difficult of all animal diseases. Under the leadership of the Department of Agriculture, veterinary college education has been placed on a higher plane of scientific and pedagogical efficiency—higher perhaps than in any other country in the world. Live-stock sanitary science, especially, is making most rapid progress.

RURAL ENGINEERING

Our broad methods of farming, incident to cheap land and a scarcity of farm labor, have driven the American farmer to the purchase of large amounts of machinery. The market thus created has incited invention and manufacture of machinery in amounts and of a character not dreamed of two or three decades ago. One of the great factors in reducing the proportion of the whole people required on the land is the substitution of horse and mechanical power for hand labor.

So far the American farmer has the advantage of competing in the world's markets with the cheap labor of Europe and other countries, which adopt our machine methods of farming so slowly that there seems no immediate danger of their competing with us in farm products. It would seem, too, that by the time their farming is broadened out, the new machinery methods will have there released from farm production large percentages of workers, that they may build up in those countries cities, railways, and other nonagricultural projects, and we shall still be able to find foreign markets for our farm products at good prices.

Manifestly the United States is going to the extreme as a country in directing relatively too large a percentage of our permanent improvements into nonagricultural communities and projects, and leaving the rural communities and the farms with relatively too few improvements. Since the price of foods has become almost dangerously high for the interests of nonagricultural classes, it would seem the part of national wisdom henceforth to devote a larger percentage of national wealth to promote investments in rural highways, better schools in the villages and open country, more highly bred plants, more highly bred animals, and vocational education both for the farm youth and for the mature farm managers and farm home makers.

Were the nation and the states to return to the open country more of the annual increment of national wealth, the percentage of people on the farm would be increased, and vastly larger sums would be invested in splendid farm homes, including groves, barns, and other structures, and in the development of fields so as to both greatly increase the productive capacity of the soil and to produce even a stronger race of farm people.

Drainage.—The open-farm ditch of a few decades ago, used to remove the water from low areas between two hills, was the mere forerunner of great drainage developments. Some entire counties in the great western agricultural states have practically all their vast level areas underlaid with tile drains, articulating in vast systems, and discharging their water into great artificial canals leading sometimes many miles to a river. Stupendous systems of great canals, sometimes supplemented by dykes, are being greatly extended so as to provide drainage for the vast flooded and swampy areas draining large rivers and skirting the gulf and ocean. Even some projects are being developed to drain shallow lakes by pumping out the water, and with a system of canals in the bottom of the lake, leading the water to the pumps, make the lake permanently into arable land.

Modern engineering is thus extending this drainage system so that in a few decades we may hope that practically all the waste swampy land of the United States will be drained, and most of the arable land which is too wet will also be benefited by the extension of under drainage to the remotest field.

There have been something like 5,000,000 acres of tile drains laid and 10,000,000 acres drained by means of open drainage. There are doubtless yet 60,000.000 acres needing drainage by one or both methods.

Irrigation.—The past decade has seen the most remarkable development in irrigation and irrigation engineering. Not only individuals, coöperating groups of landowners, great corporations and syndicates, but states and the Federal Government have taken hold of irrigation projects in the most stupendous way. There are at present something like 13,000,000 acres under irrigation in this country. It is probable that there is available water for five times the present irrigated acreage. Not only is there to be a rapid development of the great engineering feats of building larger and longer canals, impounding surface water with immense dams, pumping up subterranean supplies of water, tunneling under mountains to carry the water to the fertile plains, and the utilization for power purposes of the waterfalls made possible by irrigation works, but there has been great progress also in the science and art of using the water among the crops on the soil. The management of irrigation farms is coming to be a prominent feature of the science of irrigation and farm management and of the intensification of cropping in the economical use of the water so as to extend the given amount of available water over larger areas of land.

Road Making. — Recent statistics show something over 2,100,000 miles of public highways in the United States. Probably this will be increased to 2,500,000 miles. At present prices for labor, teams, and railway and water transportation for heavy road materials, the macadamizing of highways costs from $5,000 to $10,000 per mile, the making of gravel roads costs from $1,000 to $3,000 per mile, and the making of sand-clay or dirt roads costs less than $1,000 per mile. It is not probable that we shall ever cover more than one fifth of the mileage with broken stone, probably one half of the remainder will be gravel, and the other half sand-clay or earth roads.

The bicycle, the automobile, the consolidated rural school, and especially the object lessons of good roads already made, are combining to insure that the people in the United States are destined to take up the entire problem of improved roads for the whole country. As a financial matter the country has come to see that the investment in road construction of a few hundred million dollars annually will be necessary for a few decades, and that the total permanent investment thus added to the valuation of the property of our rural communities and our cities will represent several billions of dollars.

Technical engineering in road construction is developing in this country as in no other country and as in no other time. The survey to locate suitable road surfacing materials, methods of quarrying, crushing, and transporting materials for hard-road surfaces, and methods of locating, laying out, grading, surfacing, and maintaining roads, and also methods of culvert and bridge construction, have been developed more in the last decade than in several decades before. The office of public roads in the Department of Agriculture at Washington, and similar bureaus in many states, have come to exert a most powerful influence in the way of encouraging expenditure in road making, and especially toward the adoption of the best methods of construction. States and counties are beginning to take up the improvement of their roads as a great railway company takes up the improvement of its right-of-way. Some states are bonding themselves for millions of dollars, and counties for hundreds of thousands of dollars; and with money to work with, the states and counties, and the localities within the counties, coöperate in the permanent development of highly developed highways along the lines of the largest traffic.

Rural Architecture. — Most farm buildings are neither convenient nor pretty. The arrangement of the buildings in relation to each other is not well worked out. The investment in farm buildings is less than it should be. While the architects' fees for great buildings in our cities have created an interest which has resulted in an American school of city architecture, the architecture of farm buildings has lagged far behind. The small size of the buildings has not provided fees sufficient to develop a school of rural architecture. And, furthermore, our general economic system has, without design on the part of anyone, shifted relatively too large a part of our annual increment of wealth into permanent improvements in our cities, leaving the farm home, barn, and other buildings poorly developed.

On the other hand, individual architects here and there have devised new methods of construction, new arrangements of buildings, and interior equipment peculiarly adapted to farm homes and to the other farm buildings. City architects have in some ways assisted and in some ways hindered by their efforts at adapting city architecture to the open country on the country estates of wealthy people.

The aggregate of effective effort in building up an architecture peculiarly adapted to the family farm has been considerable. If the suggestions, plans of construction, and designs of all men and women who have worked along this line were assembled, they would provide a splendid basis from which to build up a system of country-life architecture.

It is coming to be recognized that there is needed a new agency to assemble all known facts regarding building materials, methods of construction, and plans of farm buildings. The conditions and needs of the different classes of farms in each section of the entire country should be studied. Schoolhouses, creameries, fruit-packing establishments, country churches, and other public and community structures should also be widely and carefully investigated. Not only should all the important facts as to materials, methods of construction, and plans of buildings be made available to the public, but, with all this material in hand, creative work should be done to work out still better methods and illustrate them with even better designs for buildings than those now published. Eventually there will be a consolidated rural school in each neighborhood which will be a large enough institution to support a country-life library. Those libraries will provide a means through which publications, both public and private, concerning building plans may be placed within the reach of each farmer.

During recent years some of the state agricultural colleges have inaugurated courses of instruction in rural architecture as well as in other rural engineering subjects. Graduates who specialize in this line, and practical builders who take short courses in rural architecture, will ere long be available to aid the farmer in planning the arrangement of buildings on the farmstead and in devising plans for each building. If a splendid engineering literature on rural architecture were available in circulating libraries near every farmer's home, and if builders competent to adjust published plans to farmers' needs and purses were within reach, architecture in the open country would be made over in a generation or two.

The use of cement-steel construction in rural architecture is making rapid strides. The work of the state experiment stations and of the Department of Agriculture in connection with cement silos, cement floors for farm buildings, and other cement structures, is leading to the most profound change that has ever taken place in American rural architecture. The recent invention by the office of public roads of the Department of Agriculture of a process for mixing nonvolatile petroleum with cement, making a tough surface impenetrable to water, which can be spread on woven wire and steel laths with a trowel, illustrates the possibilities of study and invention along this line. It would seem that this invention will make it practicable to construct cheap and indestructible roofing as well as outside covering and inside sheathing for farm buildings. Enough has been done with cement in the open country, including the making of fence posts, culverts and bridges, to assure that cement is largely to take the place of wood, and will necessarily greatly improve farm buildings in the future, as well as help prevent extreme prices for lumber. (See XXIX, *Mechanical Engineering.*)

Next to their dry-goods-box form, and otherwise ill-shaped appearance of farm buildings, is the unpainted condition of the weather-boarding. The movement to make all of America's outdoors pretty, now confined to localities, ought to be contagious over the entire country, that our farms and country homes may be one great park. It may be that the oil-cement wall covering, supplemented by the covering of such vines as the California creeper, the English ivy and other vines which adhere to cement walls, will come to be a very large element in making our farmsteads beauty spots. American science and art have no more open virgin field than in country-life architecture.

Machinery.—Probably the most recent development in farm machinery is the very rapidly widening use of mechanical motive power on the farm. The cumbersome thrashing outfit is giving way to the gasoline outfit with compact separate engine, or even with an engine on the same trucks as the separator. The steam traction engine was unable to gain a large place in doing the heavy field work and on the farm roads, but the traction gasoline engine is rapidly growing into wide use both at the plow and in freighting products from the farm to the markets located on the roads with steel tracks and to water highways. (See XXIX, *The Combustion Engine.*)

Possibly not less significant is the development of electric motors on the farm and in the farm home. The possibilities of the farm electric plant have been made to appear very large. The generating plant supplemented by the storage battery may serve as a center from which power, heat, and light may be distributed to the various buildings and for various purposes on the farmstead. Not the least interest in this connection is attached to the development of power helps for the country mother in helping her to carry the heavier of the physical burdens in the farm home. While the electric smoothing iron, the electric heater attached to the fireless cooker, the little motor to run the sewing machine, the washing machine, the wringer and the mangle in the laundry, the carpet sweeper, the dish washer, and the motor for pumping water into the house may seem but small affairs, they are in the aggregate quite as large in possible application as are mechanical motors for plowing the fields of the entire country. (See XXIX, *Electrical Engineering.*)

Machinery in connection with the plowing of the land, the preparation of the seed bed, the planting of the crops, intercultural tillage, harvesting, thrashing, storing, and marketing, also to operate apparatus for combating fungus and insect diseases of plants, has rapidly taken on more practical forms both for the saving of labor and for the production of larger and better products.

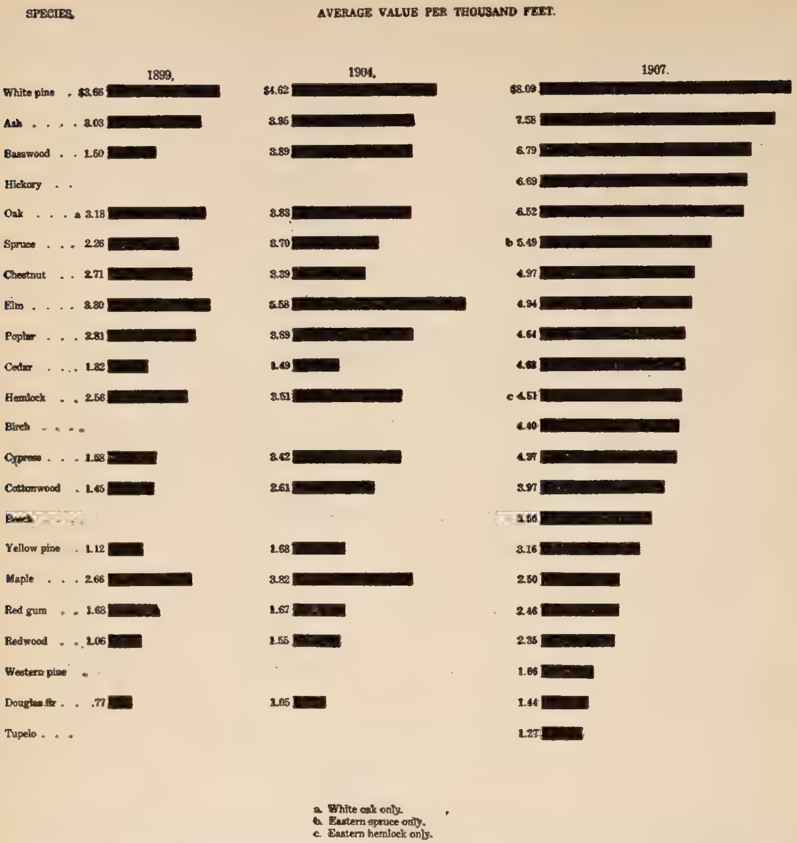
People hardly realize the large importance to the open country of the immense number of light horse vehicles which are now purchased. The bicycle continues to hold a large place in country communities; and the automobile has finally gained a substantial place in connection with the farm and the farm home. The pioneer dirt-road period will ere long appear as a rural dark age in transportation. It is easy to predict that in a few generations mud highways will cease to be the barrier between the farm home and its surroundings. It is believed that extending vocational education through the consolidated rural school to all the 30,000,000 farm people will insure that farmers thus educated find ways of conserving to the open country a much larger part of the annual increment of national wealth. It is clear that more of this annual increment is to be invested in developing the fields, in keeping the soil fertile, in making permanent fences, in erecting splendid farm buildings, in providing public rural buildings, in equipping the farm with an abundance of highly efficient machinery, and in building up the stocks of highly bred seeds, plants, and domestic animals. In other words, the return to the country may not so much mean the return of people as it does the retention of capital so as to highly develop our farms and farm homes.

Fences.—Higher prices for wooden fencing materials and the abundance of cheap iron ore and improved methods of making concrete fence posts are rapidly reducing the farm-fence proposition to its simplest terms. The barbed-wire fence and the woven-wire fence are practically the only kinds of fences now constructed, and wooden posts are rapidly giving way to posts made of reinforced concrete. The permanency of the cement posts has become a factor in the organization of the farm plan. Farmers are coming to see that permanent fields are necessary for the different permanent three-field, four-field, five-field, or six-field rotation scheme, with one field for each crop year in the rotation. The promise of permanent, remunerative prices for farm products is the mainspring which is leading to investments in all kinds of permanent improvements on the land and in the farm home.

FORESTRY

Certain facts concerning American forest crops are now clearly known. Two fifths of the area of the United States were originally forested, something like 20,000,000 square miles of forests. Three fourths of this or 15,000,000 square miles have been culled or cut. Four fifths of the standing timber in the United States are now in the hands of private parties, and one fifth is owned by the Federal and state governments. At present trees are being cut three times as rapidly as they are growing. It is clear that we must most vigorously protect all growing trees, that we must plant trees, and that we must use wood more sparingly. The National and state governments have begun to plant trees. Many millions of losses by forest fires on public and private forests in 1910 renewed the lesson that a fire-forest patrol is inexpensive as compared with many million dollars of annual loss by fire. These fires also have taught that fighting forest fires is not different from fighting fires in cities, in that quick work is the key to success. The forest guards of the United States Department of Agriculture, by stopping hundreds of fires before they had covered five acres, saved many millions of dollars. That private as well as public forests must be patrolled to prevent fires has been demonstrated during 1910.

The year 1910 marks the beginning of a policy of extensive tree planting. The department of agriculture planted over 600 acres to young forest trees, planted seeds in hills on more than 9,000 acres, and gathered many thousands of pounds of seeds for more extensive planting in 1911. Experiments are being inaugurated to find the best locations for planting



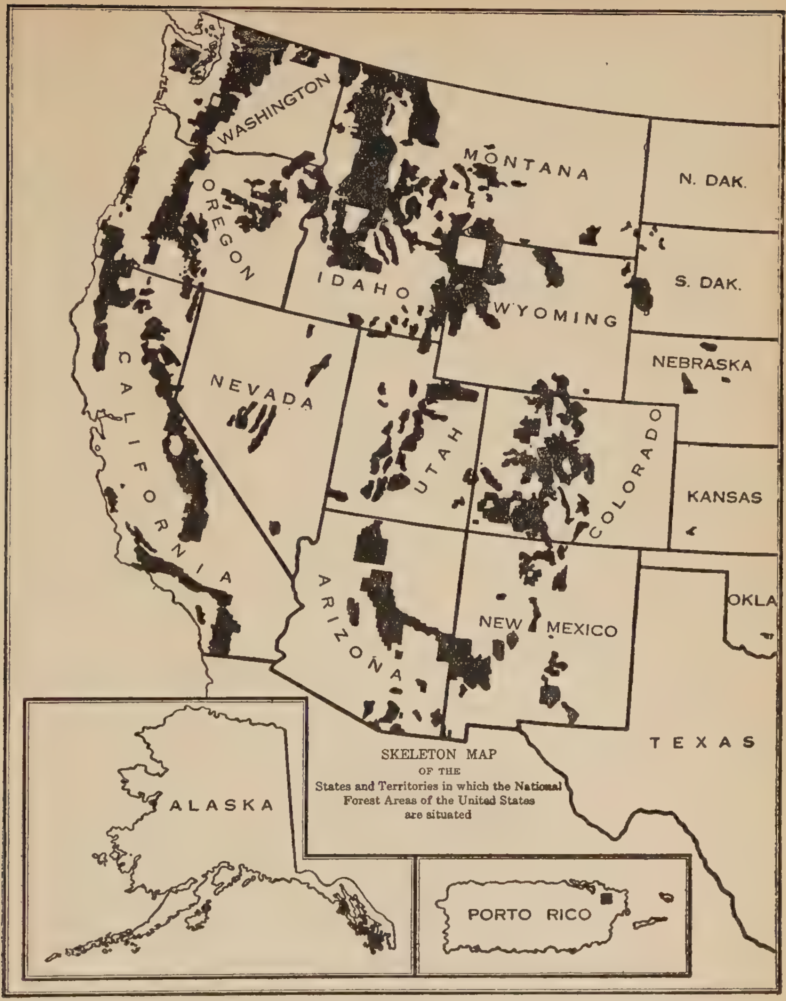
STUMPAGE VALUES OF DIFFERENT SPECIES OF STANDING TIMBER.
1899–1904–1907.

forests, the best species of trees to plant, and the best methods of planting. (See XI, *Conservation of Natural Resources.*)

RURAL SOCIOLOGY

There has recently arisen a new interest in the discussion of construction and improvement in country-life affairs. Broad discussions were begun on the social, ethical, and religious life conditions of the country. These discussions are bringing to light the splendid virility of the people on the family farms in most of the prosperous sections of rural America. At the same time attention is sharply directed to the difficulties arising from isolation on the separate farm. The unfortunate condition of the poorer whites and colored people of the South, and the narrow condition of the lives of many mountaineer people are being forcibly brought to the attention of the nation.

Among the large movements to improve the social conditions of rural communities are the consolidation of the rural schools into efficient country-life institutions. The agricultural college and department extension work, which reaches the farm home as well as the economics of farm management; the Rockefeller Hookworm Foundation, which has un-



LOCATION AND AREAS OF FORESTS OWNED BY THE UNITED STATES.

dertaken to eradicate the hookworm disease from southern rural communities; and the general movement to place home economic education in all schools attended by girls from the farm are doing much to build up the farm and to make for rural social betterment. There is a vigorous movement on foot to study the condition of the country church, which has not kept pace in its development with other lines of advancement. The Y. M. C. A. is placing county secretaries in the rural counties of many states. The boys' scout movement is beginning to include the country village and even the boys in the consolidated rural district in the open country.

Periodicals devoted to farming and home making are obtaining new subscribers by the hundreds of thousands annually and now have a circulation aggregating many millions. The social as well as the economic thought of the people in the open country, with the aid of the rural consolidated and village school, and stimulated by the rural mail delivery and telephone, is supplied with vastly more of scientific and general information than a decade ago. The open country is being vivified by higher prices and a more usable body of knowledge. The outlook for country life never before was so bright. One of the most remarkable developments of our times is the rapidly increasing betterment of the open country as a place for homes and for the development of youth.

Our open country is serving as a caldron in which are being tried out the best ideals and blood lines of the strongest peoples of the earth; that they may be recombined into a race which may set the standards for the world.

BIOGRAPHY AND BIBLIOGRAPHY

Nearly all the men who have had a prominent part in the organization of agricultural research, country-life education, coöperation, agricultural societies and agricultural shows; also most of the men who have led in legislation relating to country-life affairs, are still living. Senator Justin S. Morrill, the author of the law providing for the establishment of agricultural colleges and a later law for their larger support; Mr. Hatch, author of the Federal law for the establishment of the state experiment stations, and Mr. Adams, author of the bill providing for the further support of the state agricultural experiment stations, are among the leaders who have died. Some of the older men who have been longest in the movement to organize agriculture, either in national service or in retirement, have lived to see the marvelous progress along these lines. Among these men are Hon. James Wilson, secretary of agriculture, and Dr. S. A. Knapp, in charge in the department of the demonstration work and farm management in the South. Among the earlier effective leaders who are now more or less retired from active service are Dr. I. P. Roberts, Cornell University; Dr. E. W. Hilgard, University of California; Dr. W. A. Henry, University of Wisconsin, and Dr. E. A. Stubbs, of the Louisiana experiment station.

Bibliography.—The publications of the department of agriculture are clearly the leading series of agricultural books, reports, bulletins, and circulars. The year books, of which 500,000 are distributed annually, the many farmers' bulletins, and the many technical scientific bulletins yearly issued are all worthy of attention. These are best secured by first securing printed lists and by requesting the free monthly notices of new publications. The bulletins of the state experiment stations are also worthy of most meritorious notice, but they are so numerous that titles cannot be given. Bailey's four-volume Encyclopedia of Agriculture, New York, The Macmillan Company, is the most ambitious recent publication. Mendel's modest paper, republished in 1902, giving the laws of segregation, dominance, and recombination of characters in living organisms, is the most remarkable and most significant publication in relation to agriculture within a decade. References to this brief paper and many publications elaborating Mendelism are available through request to the U. S. Department of Agriculture.

HORTICULTURE

E. Porter Felt

Nursery inspection work had its inception in California and adjacent states about 1881. There were only four states, and they western, with general horticultural laws, in 1895. The discovery of the San José scale in 1893 in the east was soon followed by nursery inspection laws in a number of states, fifteen having enacted legislation directed mostly against the San José scale in 1898. There are now forty-six states with general or county officers charged with nursery-inspection work. The inspections are made at least once, and in some cases twice, a year. Nursery stock is shipped under certificates issued by proper authorities, most states recognizing those granted by officials in other commonwealths; some eighteen requiring nurserymen from outside the state to file a certificate from the local authorities before they are permitted to do business. A number of states, in addition, prohibit the entrance of stock without fumigation with hydrocyanic-acid gas. The county system is strongly favored in the west, while the eastern and central states administer the law through a state official. The latter may be a general agricultural or horticultural officer, an entomologist, or an entomologist and botanist. The determination of the legal requirements is usually directly or indirectly in the hands of an entomologist. Only the more injurious insects, such as codling moth, San José scale, gypsy moth, brown-tail moth, and the dangerous plant diseases like peach yellows, are discriminated against. Specific proscription by legislators of dangerous insects and fungus diseases, with sundry attempts to designate treatment by law, is giving way to more general enactments, placing larger discretionary power in the hands of an executive. There is a strong tendency to make the provisions of the various state laws, so far as they relate to interstate commerce, as uniform in their requirements as practical.

The presence of numerous winter nests of the brown-tail moth on seedling trees from Europe last winter, and the preceding, emphasized the inadequacy of the quarantine in our eastern ports against injurious insects, since individual states have no jurisdiction over interstate commerce, not to mention international trade. Fortunately, through cooperation with Federal officers, it was possible for state inspectors to ascertain the destination of the infested stock, the pests being destroyed on the grounds of the consignee. A number of states adopted special rulings to meet the danger. Arrangements have also been made for the inspection of this stock prior to its shipment to America. Stricter regulations have been enforced for the inspection of nursery stock shipped from New England sections infested by the gypsy moth and the brown-tail moth. A Federal law covering this phase of nursery-inspection work was defeated last winter owing to disagreements between interested parties. It will probably be enacted in a modified form at the present session. Canada has greatly strengthened her quarantine service during the past season, with the special object of excluding gypsy and brown-tail moths and similar pests from the Ontario fruit region.

The peril of introducing serious insect pests and dangerous plant diseases has been recognized abroad. Certain European countries have for years insisted upon the inspection of living plants to prevent the introduction of phylloxera, an American insect which has proved a most serious pest of the European grape. Australian and South African authorities have been very progressive in nursery-inspection work, some even going to the extent of excluding plants likely to be infested with serious insect enemies or fungus diseases.

The rigid quarantine maintained by several southern states against the destructive cotton boll weevil, though not strictly germane to this topic, deserves mention, since the same principles apply. Such is also true of recent local restrictions enforced for the purpose of freeing towns, counties, or even states, from the cattle tick or Texas fever tick, a most serious check upon animal industry in the South.

The Federal insecticide act of 1910 (S. 6131), modeled upon the pure-food law, is destined to have a profound influence on the constantly increasing trade in insecticides. It establishes standards for a number of the better known insecticides entering into interstate commerce and provides that the label on each package give clearly the essential constituents. New York State and Colorado have already enacted legislation along similar lines.

XIX. MINING AND METALLURGY

BRADLEY STOUGHTON

INTRODUCTION

In the iron ore situation of the United States is noted chiefly an increased amount of mining in the eastern part of the country, and a greatly increased importation of iron ore at Atlantic Coast ports, for smelting in eastern blast furnaces. For the first time also, Chinese iron ore has been imported on the Pacific Coast, and the first shipments have been made from the newly exploited iron ore fields of Texas. There has also been, as usual, an increase in the price of Lake Superior iron ore.

An important discovery of zinc ore has been made in the mines of Leadville, Colo., and of new tulleride minerals in the gold fields of Quebec and Ontario. There is also reported a discovery of sheelite, a source of tungsten in Nova Scotia.

A new process for extracting oil from wells is the so-called Leinweber method, consisting of an endless cable of absorbent material which will deliver seven ounces of oil per foot of cable. This gives an increased yield of oil compared with the plunger system, and can be used for bringing oil from great depths.

The year 1910 is also noted for the practical beginning, on a large scale, of the use of acetylene mine lamps in place of candles and oil lamps. These lights are easier to carry, and give very much better light, without at the same time vitiating the air of the mines so much. Their use has actually resulted in an increased amount of work having been done, on account of better light, and for prospecting underground they are much superior, especially since the color values of minerals are much more plainly seen. In poor air they burn better than candles or oil.

The Terry core drill is a new method of drilling holes for prospecting, and also for actual tunneling work, and is a competitor of the old diamond drill for the former purpose. The Terry drill consists of a steel pipe with a curve cut on the inside of it. The pipe is rotated by means of suitable machinery, and steel shot are allowed to fall down the curve on the inside of the pipe, between it and the core of rock that it is cutting out. Enough shot are poured down to fill the annular space underneath the end of the bit, and as the pipe is rotated, the shot travel around and cut their way into the rock. The cutting is performed by the breaking of the shot, and this continues until the shot are so small that they are forced out of the hole by the current of water, when new shot are allowed to drop down. The Terry drill can cut large cores if desired, which is especially advantageous in coal mining, because the cores of this material will not hang together unless large in diameter. The drill is much cheaper than the old-fashioned diamond drill, and can drill for a cost of about 75 cents to $3.50 per foot.

Among the most important work of the year in mining is that on accidents in metal mines being carried on by the newly formed Bureau of Mines, and also by the members of the Mining and Metallurgical Society of America, following a suggestion at a recent mining congress. The latter body is formulating a law to be presented to the different state legislatures of the country in the hope of getting uniform action which will lessen the loss of life in metal mines. Frederick L. Hoffman, of the Prudential Insurance Co., has gathered statistics to show that the ratio of persons killed yearly in American metal mines is 3 or 4 per 1,000 employed, as compared with about 0.55 to 2.50 for metal mines of Europe.

United States Bureau of Mines.—On July 1, 1910, the law became effective whereby there was established a Bureau of Mines in the Department of the Interior, to take over all the work of the technologic branch of the U. S. Geological Survey except investigations of structural materials, which latter was transferred on the same date to the Bureau of Standards, Department of Commerce and Labor. Subsequently, Dr. Joseph A. Holmes, who has had already much experience fitting him for the position, was appointed director of the newly established bureau. It is evident that the work to which the most attention will probably be paid at first is investigations of mine accidents, for which $310,000 has been appropriated. Large sums will be spent on rescue stations and appliances for prevention of accidents, investigations of explosives, electricity, gas, dust, etc., and examination and codification of mining laws. The experiment station of the Geological Survey at Pittsburg, and the large amount of data already collected there have been transferred to the new bureau. The next most important work in the immediate present will doubtless be a continuation of the fuel investigations of the Geological Survey, for which an additional $100,000 has now been appropriated. These will comprise chemical and physical investigations, including efficiency tests, investigations of lignite, peat, briquetting, etc., and inspection of government fuel purchases. The previous fuel investigations have resulted in favorable results from an educational standpoint. The Bureau of Mines will publish and distribute bulletins describing the results of its investigations and work, similar to the bulletins of the Geological Survey and other departments of the government.

IRON AND STEEL

Iron Blast-furnace Smelting.—An important development in blast-furnace smelting is the increasing use of the so-called "thin-lined blast furnace." The iron blast-furnace lining of refractory fire brick is usually cooled by water only at the hearth section and the widening part above, known as the boshes. The brickwork of such a furnace will be scorified during the smelting operations, and the blast-furnace lines will depart, to some extent, from the original form, with a consequent falling off in the efficiency of smelting, ultimately resulting in the necessity of putting the furnace out of blast and repairing the lining. The "thin-lined blast furnace," on the other hand, is cooled from top to bottom by means of channels on the outside of the steel plate, through which channels water circulates. The brickwork lining inside the steel plate is very thin; and this, together with the water cooling of the outside, enables the heat to escape so fast that the bricks do not get hot enough to corrode. Experiments of the past two years have resulted so successfully that this type of lining is now being employed in several places in the United States.

Enriched Blast for Iron Blast Furnaces.—On theoretical grounds J. E. Johnson, Jr., for some years past has been advocating the enrichment of ordinary air blast with oxygen, in order to increase the temperature of the hearth and therefore decrease the amount of fuel required; also, for the purpose of neutralizing irregularities due to moisture in the blast, and thus dispense with the costly apparatus necessary for the most modern process of drying the blast. This enrichment operation is now to be employed at the Société d'Ougrée-Marihaye in Belgium, and is a result of the modern possibility of obtaining oxygen at a low price by means of liquid air. The blast for the Bessemer converter will also be enriched in the same way.

Briquetting of Flue Dust, or Iron Ore.—The year 1910 witnessed the first important employment of processes for the agglomerating of flue dust in the United States, and the Gröndal process is the one to be employed. This process is employed in parts of Europe, although in Germany, where agglomerating is employed more than any other country, there being 500,000 tons of flue dust handled yearly, the sintering processes, of which the Gröndal is one, are not used on account of their cost and in spite of the fact that the product is said to be superior from a smelting standpoint. The most important briquetting processes in Germany are those in which the particles are agglomerated by means of high pressures and some form of binding material, such as chloride of magnesium or calcium, pitch, etc. In this connection it is interesting to note that the briquetting of cast-iron borings for melting in the cupola is now being employed to some extent in this country, this also being a European invention.

Turbine Blowers for Blast Furnaces.—The Dominion Iron & Steel Co., Ltd., of Nova Scotia, is building a fifth blast furnace, and this will be blown by means of turbine blowers, using the exhaust steam from the present blowing engines of the other four furnaces, thus requiring no additional power.

A Triplex Steel Process.—It is only a few years since the duplex steel process came into prominence. This consists of a combination of the Bessemer and open-hearth processes in which the Bessemer process is used for the rapid desiliconizing of pig iron and decarburizing down to about one per cent, followed by a treatment of the liquid metal on the hearth of a basic open-hearth furnace to finish the operation, and especially to remove the phosphorus. Another duplex process is the use of the electric furnace for a superrefining of the product of the Bessemer or open-hearth furnaces.

Now comes a triplex process, which is employed by the Dominion Iron & Steel Co., Ltd. This involves the use of two 500-ton rolling basic open-hearth furnaces which will desiliconize liquid pig iron from the blast furnaces, scrap and limestone being added to the bath also. When the desiliconizing is complete, the metal is poured out in lots of sixteen to eighteen tons each, which lots are blown in basic Bessemer converters for the purpose of dephosphorizing the metal. (The pig iron contains about one and a half per cent phosphorus, and the dephosphorizing operation requires about four to six minutes.) The third and final step of the triplex process is charging the metal from the basic converters into fifty-ton rolling open-hearth furnaces, there being, at the same time, a certain proportion of liquid pig iron direct from the blast furnace added to this charge. These fifty-ton open-hearth furnaces then complete the purification, and the steel is recarburized in the ladle and treated in the ordinary way. It is believed that the final furnaces of this triplex process can make from sixty to seventy heats a week, as compared with eighteen to twenty heats for an ordinary fifty-ton open-hearth furnace running on pig iron and steel scrap.

An All-scrap Open-hearth Process.—In parts of the United States, remote from sources of pig iron, steel scrap is very much cheaper as a raw material for open-hearth furnaces than is pig iron. It has been impossible to make up a charge consisting only of scrap, however, because the oxidizing influence present during melting requires the addition of carbon to the charge in some form in which it will not burn out; otherwise the metal will be badly oxidized when melted. Louis M. Atha, superintendent of the Titan Steel Casting Company, has discovered a form of carbon which can be added with the charge, and will remain for a much longer time during the melting down, so that it is absorbed by the metal instead of being burned and carried off. The form of carbon employed is what is known as "carbo," or oil retort carbon, which is practically a waste product of the petroleum refineries. Carbo is about ninety-nine per cent pure carbon, and is extremely slow in burning. This process has been in use for a year and a half at the Titan Steel Casting Company, and is now rapidly extending to other plants near the sources of cheap scrap supply and remote from pig-iron supply.

Tapping Open-hearth Steel into Two Ladles at Once.—The larger the charges of metal that can be treated at one time in an open-hearth furnace, the cheaper will be the cost of operation in matters of labor, fuel, etc. A limit to the capacity of furnaces, however, has been the mechanical difficulties of handling the product at one time. N. S. Maccallum, of the Phoenix Iron Company, has developed and patented a process whereby he taps the steel through a bifurcated spout into two ladles at once. By this means he puts a double charge in the furnace, and attains a larger output with consequent economy in operation.

Water Cooling of Open-hearth Furnaces.—The protection of brick work of open-hearth furnaces for some years has been improved by water cooling various parts, such as ports, uptakes, bulkheads, doors, etc. Recently the Carnegie Steel Company has installed an open-hearth furnace in which all these parts are cooled at once by a circulatory water system, which increases the comfort of the men working on the furnace platform and also increases the durability of the furnace lining and other parts, besides reducing the wear of the ports especially, and thus enabling them to perform their function better for a longer time.

European Improvements in Open-hearth Brick Work.—In some of the European plants, instead of water-cooling the brick work at various ports, the parts are made so that they can be quickly changed when worn out, without necessitating putting the furnace out of commission for the purpose and without disturbing other parts of the brick work.

Various changes have been made also in the shapes of the bricks of the regenerative chambers, in order to enable them to shed the dust carried over by the outgoing gases, and thus stand longer without becoming choked. These and other improvements were described at the International Congress of Mining and Metallurgy in Düsseldorf during the past summer.

In Germany the increasing scarcity of steel scrap necessitates using larger and larger proportions of pig iron, and the open-hearth process has been developed in several directions tending to this end. These developments were also described at the congress referred to in the preceding paragraph. One type uses molten pig iron direct from the blast furnace, but this has now been improved by pouring the liquid metal first into a mixer, which is heated and in which an important amount of desulphurizing takes place. In some places the mixer is used as a preliminary refinery. Still another process is a modification of the old Bertrand-Thiel process now in use at the Hoesch works. In this process high phosphorous Swedish magnetite, with scale and lime, are first charged into the furnace and then twenty to twenty-two tons of mixer metal poured on top. At the end of two or three hours the ore is dissolved and the metal and slag is dumped into a ladle, the latter being allowed to overflow from the top. It contains twenty to twenty-five per cent phosphoric anhydride, and is marketable as fertilizer. After separating the slag, the metal is then poured back into the furnace on top of a fresh charge of spathic ore, lime, and scrap. In about two hours more the refining is complete. In the first period of this process the silicon and manganese are almost completely removed, and the greater part of the phosphorus, while the carbon is about one half burned off. In the second period the remainder of the phosphorus, and the desired amount of carbon are eliminated.

American Iron and Steel Institute.—One of the most important advances in 1910 in the United States, from a commercial standpoint, is the development of the American Iron and Steel Institute, which is composed of the officials of almost all the iron and steel works of the country, and which has for its object the discussion of all improvements having to do with the commercial side of the industry, and especially those relating to prices and competition. During the last autumn the American Iron and Steel Institute held an important meeting attended by some of the leading iron and steel makers of England and Europe. Some of the most important papers ever presented on the commercial side of the American steel industry were read by leaders of our large companies, and a tour of inspection of some of the largest plants in the country was made. It was the most important international gathering of iron and steel men ever held anywhere.

Selling Steel Rails by the Pound.—The prices of most steel products have been quoted at so much per one hundred pounds. In this respect, the price of rails and billets is an exception, having always been quoted on a ton basis, which made it inconvenient when comparing these prices with that of other finished products. A change has been agitated for some time, and no argument existed against it other than conservatism. It has now been decided definitely that, under all future conditions, rails and billets will follow other steel materials by being quoted at the rate of so much per one hundred pounds. For several years the price of rails has remained stationary, at $28 per gross ton, which is just equivalent to $1.25 per one hundred pounds, and the latter is therefore the price quoted at the present time.

Alloys of Iron and Nickel and Copper.—Prof. Charles F. Burgess, who has been experimenting for some time with the alloys of iron and copper, and published an extended research in *Metallurgical and Chemical Engineering*, Dec., 1909, and March, 1910, has extended his studies to the effect of adding Monel metal (an alloy containing about seventy per cent nickel and thirty per cent copper), which researches were published in the Aug., 1910, number of the same magazine. He concludes that, so far as the experiments went, the addition of Monel metal to iron produces practically the same results as the addition of pure nickel, and that it can be obtained at a lower price.

Rolling and Forging of Manganese Steel.—During the past two years much interest has been shown in the successful efforts to roll manganese steel, especially in the form of plate. The means by which this has been attained have just been published in the patent specifications of Winfield S. Potter (968,601, Aug. 30, 1910). The process involves mixing the steel from the basic open-hearth furnace with molten ferro-manganese in an acid-lined ladle under a layer of acid slag. The acid slag-making materials are put in the ladle and the steel and manganese then tapped into it. The metal should be 1,400° to 1,450° C., and it is held in the ladle under the acid slag until it is cooled to about 1,375° C., the object of this being to allow the metal to be deoxidized and purified. The ingot is then teemed and before being stripped is cooled to such an extent that when stripped it will have an average temperature on the outside (not including the corners) of about 1,000° C. It is then transferred to a soaking pit, the temperature of which is slowly raised to 1,175° C. or somewhat higher, with a reducing or smoky atmosphere which requires about one half hour. The temperature is next reduced to about 1,100° C., permitted to rise to about 1,125° C., taken from the soaking pit, and subjected to light mechanical work on the outside, after which it is rolled down in the usual manner.

American Ingot Iron. — Another process which has attained a great deal of prominence, but the details of which have not been known until the year 1910, is the manufacture of the so-called American ingot iron, which is a dead soft steel made in the open-hearth furnace with the intention of resisting corrosion better than ordinary types of steel. The patents of the inventor, Robert B. Carnahan, Jr. (940,784 and 940,785, Nov. 23, 1909) show that the refining consists in carrying the oxidation of the impurities to a point well beyond that at which the operation ordinarily stops, thus getting rid of almost every trace of the carbon, but, at the same time, oxidizing the metal. This oxidation of the metal is then corrected by the addition of silicon, and finally the gases in the steel are removed by the addition of aluminum in the mold.

Open-hearth Furnaces with Coke-oven Gas.—Attempts have been made in the United States to heat open-hearth furnaces by means of coke-oven gas, but without success. At the present time, however, there is building a large plant of coke ovens near the Bethlehem Steel Company, with the intention of using the gas from these ovens for open-hearth heating. Since the process is employed with entire success in Europe, and especially in Germany, there seems no good reason why it should not be made equally satisfactory here.

Thermit Rail Welding.—The Goldschmidt-Thermit process has been developed in a number of ways during the year, and especially in the matter of welding rails, so that now the weld is made to extend not only over the flange and web, but also around the sides and over the top of the head, thus giving a very much improved support to the joint. Subsequent to welding, the metal on top of the head is ground off, leaving a smooth surface. This improved weld gives better electric conductivity, and also increases the life of the rails because the joint is the part that usually wears out first.

The Addition of Titanium to Steel.—The addition of titanium to steel has developed greatly during the year, and there are now a number of railroads using rails which have been treated with the ordinary alloy containing ten per cent of titanium. The titanium has also been used more and more in iron and steel foundries for improving the quality of the castings, and in steel works generally, for removing occluded slag and gases.

Iron—Electric Smelting.—The smelting of iron ores in the electric furnace, which a short time ago threatened to fail on account of the many difficulties met with in practice, has recently met with greater success and is said to be in satisfactory operation in the Héroult furnaces at Welland and Sault Sainte Marie, Can., and at Héroult-on-Pitt, Cal. The results at the latter place have warranted the company in deciding on the erection of five more furnaces. Success has also been obtained at the Domnarfvet furnace in Sweden. In the latter furnace (Aktiebolaget Elektrometal), the charge is heated by conduction and success has been attained largely through cooling the roof of the smelting chamber, or crucible, by means of a blast from three tuyeres through which comparatively cool gas from the upper part of the shaft is blown. There yet remains to determine what speed of circulation of gas is most desirable under different conditions of practice. The consumption of electrodes which is such an important item of expense in all electric furnaces is up to thirty-nine pounds per ton of pig iron produced, and more under abnormal conditions. The highest efficiency reached was fifty-eight per cent. The present furnace has been running continuously for eighty-five days. The weakest point is the arched roof above the melting chamber. The control over the temperature of the furnace and the character of iron produced, especially as regards silicon and sulphur, is said to be excellent. The amount of fuel required in this form of furnace is only about one-third of that required in the ordinary blast furnace, and this, of course, determines the possibilities of the furnace in localities where fuel is costly.

Steel—Electric Production.—According to a statement in *Stahl und Eisen* of March 23, 1910, there were then in operation eighteen steel refining furnaces of the Héroult type, making chiefly tool steel, war material, special steels and steel castings; nine furnaces of the Girod type, making chiefly high quality special steels and steel castings; five of the Stassano type; four of the Keller system; four of the Chaplet system, and two of the Aktiebolaget Elektrometal system; twenty of the induction system, including the Kjellin, Colby and Roechling-Rodenhausen system types; two of the Nathusius system and one each of the Frick and Schneider induction systems. The cost for electrodes is still the stumbling block of the arc furnace; nevertheless, the superrefining of Bessemer and open hearth steels in the electric furnace is still being practiced on a comparatively large scale by the United States Steel Corporation, which has just purchased the exclusive American rights to the Héroult process. The steel is increased in tensile strength thereby and phosphorus and sulphur removed practically at will. Details of the operation of the fifteen-ton Héroult furnace at South Chicago are given in *Metallurgical and Chemical Engineering*, April, 1910. It would appear that the mixer will have an important place in this combination of electric furnace with Bessemer and open hearth processes, in view of patents recently issued to William

R. Walker, technical head of the United States Steel Corporation.

Recent progress in electric furnaces was fully discussed at the fifth international congress of mining, metallurgy, applied mechanics and practical geology at Düsseldorf, June 20–25, 1910.

A process for the manufacture of ferro-silicon in an electric furnace invented by Louvier & Louis and installed at Araya, Spain, proposes to reduce this from blast furnace, reheating furnace and puddling furnace slags, and has proved very satisfactory for this novel purpose.

COPPER

Cast Copper of High Electric Conductivity and Strength.—Copper castings are ordinarily somewhat oxidized and charged with blow holes, because of the avidity with which molten copper dissolves oxygen and other gases. The deoxidizers used to free copper from these gases are successful but unfortunately they all have the property of combining with the copper and reducing its electric conductivity. Dr. E. Weintraub, of the General Electric Company at Lynn, has been experimenting by adding to casting copper boron suboxide in the form of a powder to the extent of one-thirtieth of one per cent of the weight of the metal. He later found it more convenient and cheaper to use a product containing magnesium borate, boric anhydride of magnesium and boron suboxide, because this avoids the necessity of separating the useful boron suboxide from the two other harmless agents. The resulting casting can be readily machined and has good strength, as shown by the following test:

Tensile Strength.	Elastic Limit.	Elongation.	Reduction in Area.
24,350	11,450	48.5%	74.49%

and has an electric conductivity of ninety-seven and one-half per cent if the copper melted down is perfectly pure.

Flue-dust Recovery.—The gases and fumes given off by roasting and other furnaces carry fine dust in suspension and also vapors of metals and metallic compounds in volatilized condition. These fumes not only have value but are often injurious to life and vegetation, so that the recovery of the entrained substances is both economical and beneficial. It is accomplished commonly by leading the fumes through chambers in which they are cooled and their velocity reduced, with means whereby the deposited material may be collected. C. W. Goodale cites in the January, 1910, *Bulletin of the American Institute of Mining Engineers,* an improvement adopted at Butte, Mont., where this recovery is of great industrial importance. Experiments were made with dust chambers having no obstructions, with those having alternate contractions and expansions in their cross-sectional area, with steel baffle-plates hung across the current of gases, and with networks of steel wires. The results showed that the wires gave nearly as high efficiency as the baffle-plates with greatly reduced frictional resistance. Arrangements are made for admitting air to cool the gases, for shaking the wires to remove condensed arsenic, and for more than 1,000 hoppers with a system of tracks so that the dust can be drawn from any hopper at any time. The main dust chamber is 367 feet long by 176 feet wide and 21 feet high; it contains 1,215,000 wires, weighing about 608 tons. Recording thermometers and pressure gauges are placed at the entrance and exit of the chamber and near the chimney. From the chamber to the chimney is a flue 1,200 feet long, 48 feet wide, and 21 feet high; the chimney is 506 feet high and 50 feet diameter at the top.

Bessemerizing Copper.—A recent development in the treatment of copper ores in the United States is the introduction of the Knudsen furnace which has been in successful operation in Norway for about five years. By this process a charge of bituminous coal is introduced into a basic-lined copper Bessemer converter, ignited and burned with a gentle blast of air. The ore charge, containing about 6 per cent copper, 36 per cent sulphur, 33 per cent iron, 21 per cent silica, and 4 per cent alumina is then introduced. When this is melted the blast pressure is increased to twenty pounds and the charge is Bessemerized in the ordinary manner. Practically any grade of matte up to metallic copper can be produced as desired, the slag containing less than one per cent of copper.

Another important development in copper converters for ordinary matting work is the use of a magnesite lining instead of the usual silica lining. The ordinary copper Bessemer process consists in pouring melted copper matte into a converter and then blowing streams of air into it. The oxygen of the air burns the sulphur and iron in the matte which generates sufficient heat to keep the charge molten, and the product is blister copper, which is then refined by a subsequent process. One of the greatest difficulties of this process has been the rapid wear of the lining, so that converters have to be removed after about six heats, due to the corrosive effect of iron oxide upon the silica. Magnesite has been suggested before, but on account of its high conductivity for heat at elevated temperatures, it has not been successfully employed. It was tried two years ago at one American plant and abandoned, but has recently given such satisfaction at a copper smelter in Utah that its use will be extended. The practice is described in the *Engineering and Mining Journal* for June, 1910, and the advantages of the basic lining are stated to be cheaper construction, larger vessels, less space and ground capacity required, less slag produced and lower grade matte converted. The disadvantages are loss of fines by spitting, chilling of parts of the charge and the necessity for punching the tuyeres.

Utilizing the Heat of Blast-furnace Slag.—In the smelting of iron ores, the amount of slag produced is from one half to one and one half times the weight of metal; in the smelting of lead and copper ores the amount of slag is very much greater. Therefore the loss of heat that is contained in this blast furnace slag is a very large annual item. Numerous attempts have been made to save this heat, but without success. Recent developments, however, in the use of low-pressure steam for turbines has made it possible to generate steam at or about the atmospheric pressure from the heat of blast furnace slag, and such a process has been invented by Claude Vautin of London. The essentials of the process are admitting the slag and taking it away without allowing the access of air to the steam, or allowing steam to escape. These conditions are made possible by a special slag inlet, and a trapped elevator for the removal of the granulated slag. The process consists in bringing a stream of molten slag into water contained in a closed vessel. The slag is granulated and continuously removed. As modern methods of handling slag often employ the granulated process, this part represents no additional cost, and the inventor states that steam may be generated at a little more than one-tenth the cost of using coal at $5.00 per ton. These figures are based partly upon theoretical estimates and partly upon results of actual practice.

Bessemer Roasting.—One of the most important recent developments in the treatment of nonferrous sulphide ores is the so-called "Bessemer roasting" or "blast roasting" process, whereby the ore is subjected to a blast of air which burns off the sulphur and produces a sintered product which can be smelted more rapidly and economically than fine material. The process has the further advantage of not requiring extraneous fuel. During the past year this process has been developed in several directions, and these are published in detail by Prof. H. O. Hofman, in the June *Bulletin of the American Institute of Mining Engineers*. Most of the developments are in connection with the down-draft process, patented by A. S. Dwight and R. S. Lloyd. By this process the ore is treated continuously, whereas, by the older Huntington-Heberlein, Carmichael-Bradford and Savelsberg processes, the operation was usually intermittent, different batches of ore being treated in turn.

COPPER AND LEAD

Handling of Copper and Lead Blast-furnace Slags.—An illustration of how a very simple matter may prove an important improvement of an industrial operation, is the use of an auxiliary slag bowl at the plant of the British Columbia Copper Company. Where a stream of slag is running continuously from a furnace or receptacle and is carried away in slag pots to be disposed of, there must either be two spouts which can be used alternately, or else some means of catching the slag for the few moments intervening while changing the slag pots. At the plant in question an auxiliary slag bowl, capable of holding enough slag to occupy this interval of changing, can be swung into place to catch the flow, and when an empty slag pot is ready the bowl will swing to one side and dump its contents into the new pot. Simple as this expedient is, it has proved a valuable improvement, and has also resulted in increasing the life of the pots, because when the new slag pot is placed under the spout, the slag that has been caught in the auxiliary bowl is dumped into it, forming a pool to receive the slag stream, which therefore never impinges against the metal of the pot with the resulting burning thereof.

Treatment of Furnace Gases.—Three improvements have been made during the year in the process of treating gases from copper smelters, which, for many years, have given great trouble and been a source of litigation between smelters and farmers of the surrounding country whose products have been damaged by the fume and gases coming from the smelting works. The emanations from copper smelting furnaces consist of flue dust, fume, and gases. The flue dust may be collected in suitable chambers, to which we have referred above. The fume, however, is too fine to be separated in this way and consists of various chemical compounds, such as oxide and sulphide of arsenic, as well as compounds of lead, copper, and other metals. This fume is not only harmful to vegetation, but its recovery represents a saving of value to the smelter.

In the Sprague process, which has been in successful operation at a plant of the U. S. Smelting, Refining & Mining Company in Utah for two years, and details of which were published in the March 5, 1910, issue of the *Engineering and Mining Journal,* the acid of the fume and gases is first neutralized by zinc oxide, lime, magnesia or other base, and then the fume can be filtered out by passing the gases through fabrics to the extent of about 25,000 square feet of filtering surface to a ton of fume produced per day. Fume thus recovered is collected at intervals and treated for its valuable contents.

At the Tennessee Copper Company, the problem has been solved by passing the gases through chambers and towers, which recover the sulphuric acid from the fume and gases, the value of which pays the cost of the treatment.

The third method recovers the acid from the smelter gases, and then uses the liquors so obtained for leaching the blast furnace and reverberatory furnace slags, by which means the copper therein is recovered.

Hot-blast Copper and Lead Smelting.—A furnace recently erected in Mexico employs a hot blast which is obtained from the waste heat in the slag. It has only been in operation a short time, and is described in the *Metallurgical and Chemical Engineering Magazine,* Dec., 1910.

GOLD

Cyanide Treatment.—The Crosse process for the treatment of ore slimes by agitation with cyanide solutions was described by the author at the annual meeting of the Chemical, Metallurgical and Mining Society of South Africa in Nov., 1909. In processes of this kind the difficulty has been to separate the liquid from the fine pulp, and settling tanks of great size to serve as reservoirs during the long period of time required for the fine material to settle, have been employed, or else a form of filter. The Crosse apparatus employs neither of these but consists of a central cone in which the fine ore is agitated with a cyanide solution; around this is an annular space in which the pulp is in a quiescent state by virtue of a baffle between it and the central portion. The outside annular space therefore serves as a settling tank and clear cyanide solution is drawn off near the top of it and passes to the zinc boxes, where its contained gold is precipitated in the usual way. The reagent is then pumped back to the central cone and used over again to dissolve the gold and silver in the ore. The process has been in operation for fourteen months, during which some thirty tons of black sands, averaging about twenty-three ounces gold per ton, have been treated with an extraction of 96.88 per cent.

Improvements in treatment of slimes have been usually mechanical in nature, such as the one described above, and also a method of continuous agitation described before the Instituto Mexicano de Minas y Metalurgia and translated in *Metallurgical and Chemical Engineering*, July, 1910, which showed a gain in extraction of both gold and silver and a saving in cyanide and operating labor over the intermittent method at the same plant. Now the technologic branch of the United States Geological Survey comes forward with a suggestion based on chemical principles which involves preventing the formation of collodial matter in the slimes which render them difficult to filter or to settle. It is thought that this may be accomplished in large part by grinding the ore in coagulating solutions, such as the oxides, sulphates, and chlorides of calcium and magnesium.

Instead of dissolving the zinc residues left after precipitating gold from cyanide solutions, at the Dolores Mines in Mexico they dissolve them in the strong cyanide solution, first using agitation and then a filter press. In this way a high-grade bullion is obtained without the use of acid. The cyanide solution subsequently runs through fresh zinc boxes so that nothing is lost.

J. C. Clancy, chief metallurgist of the Moore Filter Company, has patented a process for using crude, commercial calcium cyanamide as a solvent for precious metals in ores, or for regenerating cyanide solutions, which process has attracted much attention.

Another discovery which has created a great deal of interest is that of J. E. Porter of Syracuse, N. Y., who uses a new porous medium for a diaphragm and for a filter, consisting of silica sponge. This is especially useful in connection with the now prominent method of treating gold ores by cyanide, in which the ore is ground to a very fine pulp and then agitated with the cyanide solution. The silica sponge is used as a diaphragm in the bottom of the agitation tank and after the charge has been run in, air is admitted below the diaphragm which is so porous that air can pass through it with little resistance, but no solid matter will permeate it. The action of the cyanide is very rapid and intense, and in eighty per cent of the runs made, an extraction of over fifty per cent of the combined gold and silver values was obtained in the first hour of agitation. The consumption of cyanide is less than in some of the other agitation methods, and it has been found that the pores of the sponge are not choked by the fine particles of ore. Besides using the sponge as a diaphragm in the tank, it has been successfully employed in the filtering of the solutions, and as a clarifier.

It is also suggested that another application of this sponge may be found in the saving of flue dust in smelting operations, to replace the present "bag-house" method for filtering the dust particles out of the gases.

The use of tube mills for fine grinding for cyanide work is an important development of recent years, and in the year 1910 a triple tube mill has been developed, in which three tubes are placed together with a cross section somewhat like a clover leaf, and rotated as a unit. This method has the advantage of not giving an unbalanced load in the rotating, as is the case of a single tube.

The Chlorination Process. — Although the method of producing chlorine by the electrolysis of ordinary table salt has been in use at the Mt. Morgan Mine, Australia, for some time, in connection with the extraction of gold by chlorination, the details of the process have been kept more or less secret until recently published by the Australasian Institute of Mining Engineers. When an electric current is passed through a strong solution of sodium chloride, chlorine is liberated at the anode and caustic soda and hydrogen at the cathode. It is necessary that the chlorine and caustic be prevented from mixing after their liberation, and this has been most effectively accomplished at Mt. Morgan by means of an asbestos cloth diaphragm. The efficiency of the process, based on the production of chlorine per unit of salt used, is 55 per cent when the caustic is run to waste, and 99.8 per cent when the caustic-soda solution is evaporated. The amp-hour efficiency is 63.72 per cent and the watt-hour efficiency, 49.24 per cent. Power is the chief item of expense in production of chlorine and experience at Mt. Morgan indicates that a suction-producer plant directly connected to a dynamo is the cheapest and most reliable source.

Electrolytic Refining. — The electrolytic refining of gold is applied especially to the separation of gold and silver in alloys which are obtained as products of industrial smelting operations, and is employed extensively. The Wohlwill modification of this process, with the recovery of platinum, is already important, and lately a further improvement, emanating from the same source, has come prominently into notice. By this improvement an alternating current is superposed on the usual direct current necessary for the deposition of the metal. The alternating current serves no purpose as far as the deposition of gold is concerned; the amount of that metal deposited on the cathode is in proportion to the direct current only, according to Faraday's law; the function of the superposed alternating current is to keep the anode clean by breaking up the layer of silver chloride formed at the anode and thus avoid scraping it off mechanically. By this means it is possible to greatly increase the anodic direct-current density and to treat alloys much richer in silver than is possible by direct current alone. It also avoids the passage of about nine per cent of the gold, as formerly, into the slimes in the form of a fine dust. The slimes still contain traces of gold, but generally not more than one per cent of the anodes, and the spongy structure causes them to drop off by themselves. Where it is not important to employ current densities of more than 1,000 amperes per square meter, the superposition of alternating current permits the use of only one fourth as much hydrochloric acid; or else, we can electrolyse without the necessity of raising the temperature of the electrolyte to 60° or 70° C. In practice the process employs a direct-current and an alternating-current dynamo connected in series. In general, the electrolyte is a gold-chloride solution, containing at least three per cent hydrochloric acid and heated to 60° or 70° C., but, if time—and therefore direct-current density—is not of great importance, we may omit heating the electrolyte, or else may reduce the hydrochloric acid to 0.7 or 0.8 per cent.

ZINC

Zinc Smelting.—With the object of obtaining zinc free from lead when smelting, Evan H. Hopkins has been experimenting some ten years, and one favorable result of this work was described before the Institute of Metals in London, in Jan., 1910—namely, a carbonaceous filter through which the gases from the retort pass on their way to the condenser. It is not necessary to alter materially the usual zinc retort or furnace, and only a slight modification of the condenser is required; viz.: widening its mouth. The best type of filter seems to be small pieces of coke packed into a fireclay tube and so placed that the heat present will maintain the carbon in an incandescent condition. Its function is to act as a reducing agent on the vapors containing the volatilized zinc and other gases emanating from the retort, and it operates to deposit and remove lead, thereby increasing the purity of the zinc subsequently condensed, to reduce carbon dioxide to carbon monoxide and to reduce zinc oxide to metallic zinc vapor, thereby increasing the yield of zinc from the ore, and reducing the production of zinc oxide or "blue powder." It has been found that, by using the Hopkins condenser and filter, the zinc is invariably purer and freer from lead, no zinc fumes or zinc flame escape from the condenser, a higher and more regular yield of metallic zinc is obtained, the metal is hotter in the condenser and no skulls of metallic zinc are formed, while a higher yield is obtained the hotter the furnace, whereas, in the ordinary type of condenser, the hotter the furnace the greater the amount of zinc flame, fume and loss.

Another important advance in the smelting of zinc is the mechanical charging of the retorts in furnaces, and a machine now in use in Silesia is said to be giving satisfactory results, discharging 120 retorts in thirty minutes, and recharging them again in twenty minutes. It is said to cut the number of men required in two, and materially shorten the operation of distillation.

An important development in the zinc industry in the latter half of 1910 is the waning supply of natural gas in the Kansas district, with the indication that it will probably give out during the winter at Iola. This has given a good deal of uneasiness, lest there should be a shortage of zinc in the United States, which, in view of the already existing shortage in Europe, may have an important effect upon the market.

Electric Smelting.—Owing to the high cost of zinc smelting, and the high temperature required, electric furnaces have been regarded with much interest in the zinc industry, and it is freely prophesied that a suitable furnace must result from the several experiments even now in progress. A furnace, erected under the De Laval patents, is operating in Sweden, and one of a different form is being erected in London by the Laval-Ferguson Syndicate to demonstrate its applicability and economy. A description of this process appears in the recent *Bulletin* of the Department of Mines, Can., listed in the bibliography at the end of this review.

In the same pamphlet is the description of a process invented by Côte and Pierron, which is claimed to deal especially with composite zinc-lead ores because it effects a practically complete separation of the two metals.

Still more interesting from an industrial standpoint, because further advanced, are experiments made and being made at the Hohenlohe Werke in Upper Silesia, with a 150-kw. furnace of the resistor type, based upon several patents issued severally and jointly to F. A. J. FitzGerald, of the well-known electro-metallurgical laboratories of FitzGerald & Bennie, Niagara Falls, and to John Thomson of New York. In this furnace the charge is heated by a carbon resistor, which is generally placed above it. Tests are cited to show that the electrical efficiency has been respectively seventy-four and seventy-eight per cent, and that the furnace can be maintained accurately at a desired temperature, and that the lining has a satisfactory duration.

Lixiviation.—The smelting of zinc ores consists in roasting until the metallic portion is in the form of zinc oxide, and then reducing this by means of carbon at a temperature where the zinc is volatilized and passes off in vapor from which it is subsequently condensed into liquid form. The smelting is performed in fireclay retorts. The process is attended with many difficulties, due especially to the severe demands upon the retort material as to its strength, elasticity, and refractoriness, the presence of impurities, such as lead and iron, which tend to attack the retorts, or become volatilized with the zinc and vitiate it, or both. The announcement of a successful chemical leaching process would therefore be received with interest. Patents for this type of process have been issued to H. T. Durant, H. L. Sulman and W. Hommel of London, and it is described in the *Mining Journal* of July 16, 1910, and said to be in successful operation in Swansea. By this method the ore is roasted and then leached by agitation with water and the sulphurous acid evolved in the roasting operation. This forms bisulphite of zinc, which is precipitated by injecting steam or hot gases which drive out the excess of sulphurous acid. The precipitated sulphite of zinc is heated to form zinc oxide and sulphurous acid gas, the latter being used for leaching again, while the former, which is practically free from lead, is a marketable product. The ore residues carry lead and any other metals that may have been originally present in the ore.

NICKEL

Electric Smelting.—The high cost of nickel and the cost of chemicals usually required for smelting it, renders an electric smelting process available if power can be obtained at a moderate figure. During the current year such an electric smelting process has been applied to the ore deposits of Webster, N. C., where several other methods had been tried and abandoned on account of excessive cost. The process was invented by C. T. Hennig of Brooklyn, and smelts the hydrated nickel magnesium silicate ore to produce nickel silicide. The bottom of the furnace forms one electrode and the other electrode is a carbon block or rod suspended and passing through the cover. Coke is used for reducing the ore. It is proposed to use the nickel-silicide for the manufacture of nickel steel direct, and it is readily dissolved in the molten steel. It is also proposed, when desired, to Bessemerize the product and produce ferro-nickel. Water power is available for power to produce the current. (See also XX. *Manufactures;* XXIX. *Chemical Engineering.*)

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XX. MANUFACTURES

S. N. D. North

Statistics of Manufactures.—It is impossible to make even an approximate estimate of the value of the manufactured products of the great nations; few of them undertake a census of manufactures and these are partial and defective. The United States was the first country to attempt such a census, and attains results more definite than are secured elsewhere. Statistics of manufactures are found to be the most complicated of any branch of statistics, not excepting vital statistics, and some of the difficulties are apparently insurmountable. They are due to the enormous variety in products and the impossibility of making accurate classifications; to the extensive existence of so-called industrial combinations controlling many establishments in different states, many of which produce semifinished products sold to others; to the duplication of product which thus results, swelling the nominal volume of production far beyond its actual quantity and value; to the different methods of wage payments prevailing, either by the day, the week, or the piece; and so many standards of piece payment prevail that an accurate determination of an average wage is impossible.

Capital Invested.—Another difficulty is the impossibility of determining with accuracy the amount of capital invested in manufacturing enterprises. Many of these enterprises are not corporations, and have no capital stock. The amount of bonds and stocks issued by manufacturing corporations does not indicate the actual investment of capital, being in many instances far in excess of that investment, or a capitalization based upon potential earnings rather than investment. This investment may consist of mill property, of a value dependent largely upon the degree of success attending the enterprise; upon stocks of materials on hand; manufactured goods on hand, and stock in process of manufacture, together with book accounts, these items being subject to liabilities outstanding. It is impossible to procure from manufacturers an accurate balance of these items, upon which a uniform determination of capital investment can be based; and it is therefore the judgment of experts that the amount of capital invested in manufactures, as reported by the United States Census, is of no great value, and that these statistics should be abandoned as misleading. It is a problem somewhat similar to that which arises in connection with the physical and commercial valuation of railroads. The British "Census of Production" does not attempt to state the amount of capital invested in British manufactures. It is interesting to compare the amount of capital invested in American manufactures, as reported by the census of 1905, $12,686,265,673, with the par value of outstanding railroad bonds and stocks, reported by the Interstate Commerce Commission as $17,487,868,935 in 1909.

Industrial Combinations.—The difficulty of ascertaining actual capitalization has been further complicated by the tendency of American manufacturers to organize industrial combinations by the consolidation, in the most important industries, of many individual plants under single organizations, and under conditions which vary greatly. In the development of this form of business, many plants have been acquired only to be closed or dismantled, in order to withdraw their competition. This tendency to consolidation is not peculiar to the manufacturing enterprise of the United States. It has progressed steadily in England, Germany, France, Canada, and elsewhere; but in no other country has it reached proportions so great and significant as in the United States, and nowhere else has it influenced so large a proportion of the different industries. While there is no important industry in which it can be claimed that a single combination possesses a monopoly of production, there are a number in which the preponderance of a single combination in mills, resources and volume of output, gives it a degree of control over prices and production which affects the markets in unmistakable ways. Instances of this character are the Standard Oil Company, the American Sugar Refining Company, and the United States Steel Corporation. This last is believed to be the largest industrial organization in the world, and to control more than one half of the American production along the lines in which it specializes. Its plants not only include blast furnaces, rolling mills, coke mills, and other manufacturing establishments, but also iron and coal mines from which it obtains raw material, and railroads and steamships by which it is transported, together with many accessories of mercantile business. This corporation, since its organization in 1902 with a total capitalization of $304,000,000 in bonds, $550,000,000 in preferred stock, $500,000,000 in common stock, making a total authorized capitalization of $1,354,000,000, has added enormously to its manufacturing facilities, including such enterprises as the building of complete cities like that at Gary, Indiana, and another now projected in Alabama.

The year 1910 has witnessed several consolidations of individual plants into single combinations. The International Cotton Mills Corporation includes twenty-two cotton mills in New England, New York, Pennsylvania and Maryland, and two in Canada, being the first large combination undertaken in this industry in the United States. A combination has been nearly perfected of a number of woolen and worsted mills in New England, New York and Pennsylvania, with a capitalization of $30,000,000, following the example of the American Woolen Company, organized in 1898. A new combination of bakery establishments has been organized under a Delaware charter, capitalized at $30,000,000, under the name Federal Biscuit Company, absorbing some seventy-five large baking establishments east of the Rocky Mountains, and many of the independent establishments in the Borough of Manhattan. Another notable combination is the General Motors Company, with a capital of $60,000,000, and including about thirty-five plants for the manufacture of machines and parts. Another projected combination, closely akin to manufacturing, aims to revolutionize the marketing of raw cotton in this country, by establishing warehouses in all cotton producing sections as well as at manufacturing centers for the storing of the crop, instead of selling it from hand to mouth, as at present. It will establish compresses and ginneries in connection with its warehouses, and by other economies claims that it will greatly reduce the costs of marketing, estimated to average at present $5 per bale. A saving of $50,000,000 a year in these costs, including freight, insurance, etc., is promised. Negotiable warehouse receipts play an important part in the scheme. The organization takes the title of the General Cotton Securities Company, and is largely financed by the Hirsch syndicate of London.

Gross and Net Value.—Partial enumeration of manufacturing establishments takes place in Germany, France, Holland, and Belgium. In 1907 Great Britain made for the first time a "Census of Production," indicating the gross value of production, the value of net output, and the number of persons employed, constituting the nearest approach to the American census of manufactures attempted elsewhere. For thirteen great groups of industries this census reveals a product valued at £1,428,874,000 which, converted into American money on a valuation of $4.86 per £, is equal to a gross valuation of $6,944,327,640. The English census attempts to secure a net valuation of manufactures, by deducting from the gross value the cost of materials and amounts paid to other firms for purchased semimanufactured materials. This method of obtaining net value is unsatisfactory and uncertain. The gross value of United States manufactured products of 1905 was returned as $14,802,147,807, which, after deducting the cost of materials used, and of fuel, freights, etc., leaves a net value of $9,821,205,387. The value added to that of materials used in manufacturing processes was thus $6,743,399,718. This net value is exclusive of all so-called neighborhood and household industries, such as dressmaking, millinery, tailoring, carpentering, rural grist and saw mills, and the hand trades. The value of the total products from these omitted industries is comparatively small.

The United States Census divides the great industries of the country into fourteen groups, and the following table shows the principal figures for each of these groups, as returned in 1900 and 1905:

Group.	Census.	Number of Establishments.	Capital.	Wage-Earners. Average number.	Cost of materials used.	Value of products, including custom work and repairing.
			Dollars		Dollars	Dollars
United States......	1905	216,262	12,686,265,673	5,470,321	8,503,949,756	14,802,147,087
	1900	207,562	8,978,825,200	4,715,023	6,577,614,074	11,411,121,122
1. Food and kindred products.........	1905	45,790	1,173,151,276	354,054	2,304,416,564	2,845,234,900
	1900	41,159	900,927,187	301,305	1,778,644,270	2,193,791,594
2. Textiles...........	1905	17,042	1,744,169,234	1,156,305	1,246,562,061	2,147,441,418
	1900	17,647	1,340,633,629	1,022,123	894,846,961	1,628,606,214
3 Iron and steel and their products....	1905	14,239	2,331,498,157	857,298	1,179,981,458	2,176,739,726
	1900	13,874	1,538,459,831	737,986	993,965,831	1,806,278,241
4. Lumber and its remanufactures.....	1905	32,726	1,013,827,138	735,945	518,908,150	1,223,730,336
	1900	35,181	730,067,675	672,655	481,761,505	1,009,778,057
5. Leather and its finished products....	1905	4,945	440,777,194	255,368	471,112,921	705,747,470
	1900	5,313	327,804,674	241,662	390,678,471	569,619,254
6. Paper and printing..	1905	30,787	798,758,312	350,205	308,269,655	857,112,256
	1900	26,605	557,131,055	297,320	213,701,954	605,114,847
7. Liquors and beverages.............	1905	6,381	659,547,620	68,340	139,854,147	501,266,605
	1900	5,740	515,160,244	55,120	93,815,032	382,898,381
8. Chemicals and allied products.........	1905	9,680	1,504,728,510	210,165	609,351,160	1,031,965,263
	1900	8,812	1,139,093,102	182,227	437,637,550	735,432,542
9. Clay, glass, and stone products.........	1905	10,775	553,846,682	285,365	123,124,392	391,230,422
	1900	11,527	335,400,558	231,753	85,168,409	270,726,065
10. Metals and metal products, other than iron and steel	1905	6.310	598,340,758	211,706	644,367,583	922,262,456
	1900	5,505	389,735,215	171,963	481,190,510	710,525,157
11. Tobacco...........	1905	16,828	323,983,501	159,408	126,088,608	331,117,681
	1900	14,959	111,517,318	132,526	92,866,542	263,713,173
12. Vehicles for land transportation....	1905	7,285	447,697,020	384,577	334,244,377	643,924,442
	1900	8,739	394,235,576	314,340	267,129,730	505,094,454
13. Shipbuilding.......	1905	1,097	121,623,700	50,754	37,463,179	82,769,239
	1900	1,107	77,341,001	46,747	33,474,896	74,532,277
14. Miscellaneous industries............	1905	12,377	974,316,571	390,831	460,205,501	941,604,873
	1900	11,394	621,318,135	307,296	332,732,413	655,010,866

Comparison with Other Countries.—This value is far greater than the value of the manufactured products of Great Britain, which comes next in rank. Michael Mulhall, in the *Industries and Wealth of Nations* estimated the value of manufactured products of the United States and the principal European countries at four periods from 1820 to 1894, inclusive, as follows:

	MILLIONS OF DOLLARS.			
	1820.	1840.	1860.	1894.
Great Britain....	1,411	1,883	2.808	4,263
France......	1,168	1,606	2,092	2,900
Germany...	900	1,484	1,995	3,357
Austria.....	511	852	1,129	1,596
Other states.	1,654	2,516	3,455	5,236
Europe.....	5,644	8,341	11,479	17,352
United States....	268	467	1,907	9,498
Total.....	5,912	8,808	13,386	26,850

According to this estimate the United States had risen from the fourth rank in 1860 to the first rank in 1894, Germany having in the meanwhile taken the second rank formerly held by France. The value of manufactured products in the United States was equal in that year to those of both Great Britain and France combined, and comprised practically one third the total of manufacturing nations. Mulhall states that American manufactures had multiplied twenty-four fold since 1840, while those of Europe had only doubled, and he attributes this much more rapid growth chiefly to the more intensive use of machinery in this country. Undoubtedly the United States manufactures have advanced even more rapidly, relatively, since 1894, than those of any European country, owing to the much more rapid increase in population and the more effective exploitation of our unsurpassed natural resources, particularly in coal, iron, copper, lead, and the great agricultural staples.

Mulhall points out, however, that at least thirty-three per cent of the nominal value of American manufactures is artificial, by reason of the high protective duties imposed on competitive manufactures imported from abroad. Undoubtedly this fictitious value appears in the statistics; but whether it is thirty-three per cent, or less or more, it is impossible to say. The value of manufactured products in France, Germany, and other European countries is artificially increased to some degree in the same manner, but far less than in this country, while the value of English manufactures is upon a strictly free-trade basis.

Mulhall estimated the relative value of output per employee as £107, or about $500 for Great Britain in 1904; and as £270, or about $1,300, for the United States, the latter estimate being nearly three times the English average. The census of 1900 shows an average product per wage-earner in the United States of $2,450, nearly five times Mulhall's estimate for Great Britain in 1894. The census of 1900 showed 29,073,233 persons engaged in gainful occupations, of whom 7,085,309 were assigned to manufacturing and mechanical pursuits. (See II, *Statistical Tables.*)

Employees and Wages.—The 1905 census presents this interesting table, showing by months the fluctuations in the number of employees:

NUMBER OF EMPLOYEES

MONTH.	Total.	Men 16 years and over.	Women 16 years and over.	Children under 16 years.
January	5,262,567	4,074,441	1,034,765	153,361
February	5,330,577	4,123,314	1,052,624	154,639
March	5,450,963	4,223,835	1,070,563	156,565
April	5,496,144	4,276,617	1,061,391	158,136
May	5,516,156	4,310,410	1,047,486	158,260
June	5,467,764	4,272,643	1,034,866	160,255
July	5,327,932	4,155,955	1,015,934	156,043
August	5,424,579	4,208,512	1,054,153	161,914
September	5,611,489	4,325,420	1,116,905	169,164
October	5,677,732	4,381,251	1,129,222	167,259
November	5,587,406	4,327,079	1,098,068	162,259
December	5,490,543	4,254,979	1,074,631	160,933

The total amount paid in wages to these employees was $2,009,735,799, an increase of 29.9 per cent over 1900: 86.8 per cent went to men; 12.1 per cent to women, and 1.1 per cent to children. In addition there were 519,751 salaried employees to whom were paid $574,761,231.

Manufactures in the United States are as notable for their remarkable differentiation as for rapid growth. Practically everything that is manufactured elsewhere in the world is made in this country. The single staple industry in which we have thus far made no considerable progress is the linen manufacture.

Cotton Manufacture.—In all other branches of the textile industry, our recent growth has exceeded that of any other country, and this is notably true of the cotton manufacture, in which we now rank second only to Great Britain, and our machinery equipment and manufactured product are equal to that of the rest of the world, England and Germany excepted. (See I, *Statistical Tables.*) The total number of cotton spindles in the world is 134,536,430, of which England contains 53,312,000; the continent of Europe, 34,600,000; and the United States, 28,018,305. The original seat of the American cotton manufacture was New England, and more particularly Massachusetts, but of late years the more rapid development has taken place in several Southern States: North and South Carolina, Georgia and Alabama lead in this development in the order named. The 1909 figures for cotton spindles located in the North were 17,589,105, and in the South, 10,429,200. The actual consumption of cotton in Southern mills is now greater than in the North, owing to the fact that the Southern product is largely confined to coarse products. The nearness of the cotton mills to the supply of raw material is undoubtedly a factor in this rapid development; and the ambition prevails in that section of the country to increase the consumption of its chief product to such a point that the bulk of its great staple shall be consumed at home.

Wool Manufacture.—The wool manufacture has grown in the United States less strikingly than either cotton or silk, but to a degree which has practically kept pace with the growing home market. It has been hampered in its development for the last forty years by high duties upon the raw material maintained through all tariff revisions, except that of 1894, in the hope that it would ultimately develop a sheep industry capable of supplying all the wool requirements of the country. This expectation is as far from realization to-day as at the beginning of the experiment, and the great proportion of the fine and cross-bred wools used in the worsted manufacture is imported, chiefly from Australia through the medium of the London auction sales. Considerable quantities of South American wool are also used. The branch of the wool manufacture in which progress has been most notable is that of carpets, dependent entirely upon imported raw material. Beyond question this country is the greatest producer of machine-woven carpets, a fact partially accounted for by the larger consumption among all classes of our people.

Silk Manufacture.—Unaided by any natural advantage, the growth of the silk manufacture has been even more notable; depending altogether upon imported raw material, its development bears many points of resemblance to that of the cotton manufacture in Great Britain. In 1850 there were but sixty-five small establishments engaged in this industry, with the production valued at less than $2,000,000. In 1895, the latest year of available statistics, the number of establishments had increased to 624 and the value of product $133,288,072, consuming annually nearly 12,000,000 pounds of raw silk, valued at over $76,000,000. This product is believed to be at least equal in value to that of France, which has hitherto ranked as the leading silk manufacturing country. No other nation approaches these two in the quality and value of its machine manufactured silk. Paterson, N. J., is the leading center of the industry in this country; and an industrial exposition was opened there Nov. 9, 1910, to commemorate the one hundredth anniversary of the manufacture of silk by power in this country.

The annual report of the Silk Association of America shows the establishment of 5,899 additional broad looms in 1909; of 564 narrow looms, and of 224,124 spindles—a marked increase of equipment over the increase in 1908. The imports of raw silk in 1909 were 151,924 bales, 22,247,938 pounds, value $76,440,822, as compared with 130,748 bales, 18,937,057 pounds, valued at $67,029,800 in 1908.

Iron and Steel.—The iron manufacture is not only the greatest of our manufacturing industries, but has in later years increased its output more rapidly than any other country, overtaking Great Britain, which formerly held supremacy, and keeping far in advance of Germany, the third largest producer. The advance in this industry may be attributed to the relative abundance and accessibility of the raw material, to the large and constantly growing home market, but more particularly to the American invention of labor-saving machinery and appliances for reducing labor costs. These conditions have made it possible for this country to produce more than a quarter of the iron and steel of the world. The iron and steel manufacture is accepted as the barometer of conditions in all manufactures and the index of industrial and trade conditions progress. The following table, showing the growth of the steel production of the United States for the decade, is significant in many ways:

STEEL PRODUCTION IN UNITED STATES IN GROSS TONS

CALENDAR YEAR.	Bessemer Steel.	Open-Hearth.	All Other Steel.	Total Ingots and Castings
1899	7,586,354	2,947,316	106,187	10,639,857
1900	6,684,770	3,398,135	105,424	10,188,329
1901	8,713,302	4,656,309	103,984	13,473,595
1902	9,138,363	5,687,729	121,158	14,947,250
1903	8,592,829	5,829,911	112,238	14,534,978
1904	7,859,140	5,908,166	92,581	13,859,887
1905	10,941,375	8,971,376	111,196	20,023,947
1906	12,275,830	10,980,413	141,893	23,398,136
1907	11,667,549	11,549,736	145,309	23,362,594
1908	6,116,755	7,836,729	69,763	14,023,247
1909	9,330,783	14,493,936	130,302	23,955,021

It appears that the steel production has increased two and one third times in eleven years. The effect of the industrial depression in 1908 is marked. The rapid gain of the open-hearth product, over that of the Bessemer method, is notable.

The Annual Report of the American Iron and Steel Association (July, 1910) shows an annual blast furnace capacity of 38,144,900 tons on that date; and it presents data of furnaces building upon which it bases an estimate of the live capacity at the end of 1911, at 40,228,400. Regarding the ownership and interrelations of the new furnace capacity, the report says:

> Of the thirty-five furnaces which were completed from Nov. 1, 1907, to June 30, 1910, twenty-two furnaces, with an approximate annual capacity of 3,415,000 tons, are operated by companies which consume in their own steel plants virtually all the pig-iron made, and thirteen furnaces, with a total annual capacity of 1,053,000 tons, are operated by companies which make pig-iron for the general market. Of the twenty-two furnaces built by companies which make pig-iron for their own consumption four furnaces, with an annual capacity of 690,000 tons, were built by the Carnegie Steel Company; eight furnaces, with an annual capacity of 1,200,000 tons, by the Indiana Steel Company; three furnaces, with an annual capacity of 450,000 tons, by the Jones & Laughlin Steel Company; two furnaces, with an annual capacity of 360,000 tons, by the Youngstown Sheet & Tube Company, and five furnaces, with an annual capacity of 715,000 tons, by the Worth Brothers Company, the National Tube Company, the New York State Steel Company, and the Wisconsin Steel Company. In addition, on June 30, 1910, seven of the sixteen furnaces then building were being erected by companies which will use in their own works all the pig-iron made. These furnaces will have an annual capacity of 1,116,500 tons. On July 15 the Minnesota Steel Company, a subsidiary of the United States Steel Corporation, broke ground at Duluth for two furnaces. These furnaces will have an annual capacity of 325,000 tons, and their output will be used in the company's building steel plant at Duluth.

Exports of Manufactures.—This development has led to a notable extension of American iron into the markets of the world. Down to the year 1890 the imports of iron and steel were far in excess of our exports. It is now calculated by the Bureau of Statistics that during the ten years ending June 30, 1910, the value of iron and steel manufactures exported was $1,411,000,000, which exceeded by more than four times the value of the imports of iron and steel, which totaled $307,000,000 for the decade. In 1909 our imports of all forms of iron and steel were placed at $30,571,542, foreign value, while the home value of our exports of iron and steel in the same year was $157,674,394. These statistics recall the remark of Andrew Carnegie in 1901, that the United States is not only supplying its own wants in iron and steel, but in the thousand and one articles of which steel is the chief component part. "The influence of our steel-making capacity," he continued, "must be marvelous, for the nation which makes the cheapest steel has the other nations at its feet as far as manufacturing is concerned in most of its branches. The cheapest steel means the cheapest ships, the cheapest machinery, the cheapest thousand and one articles of which steel is the base." The London *Times*, which sent an expert to the United States to study our methods of steel manufacture, declared that "the competition of the United States manufacturers in markets hitherto our own, comes from a proficiency in production such as has never before been seen."

In many other manufactures, the growth of the export trade has been only less notable. It is chiefly in agricultural implements, wheat flour, cotton manufactures (mainly to the Orient), scientific and electrical apparatus, machinery of many descriptions, boots and shoes, mineral oils, paper, and manufactures of wood. The fiscal year ending June 30, 1910, witnessed the largest exports of manufactures in our history, aggregating $768,340,000, as compared with $750,000,000 in 1908, the former high record year. Manufactures formed forty-five per cent of our total exports, as compared with thirty-five per cent in 1900, and twenty-one per cent in 1890. The chief growth in exports was to Canada, Central and South America, and South Africa, while some decline appears in the exports to the European countries.[1] (See XXI, *Exports of Manufactures.*)

Large as is our foreign trade in manufactured goods, it is estimated by the census office that it represents but about six per cent of the total domestic production. Imports of manufactures into the United States were valued at $653,100,000 in 1910. The United States now holds the third rank in the volume and value of its exports of manufactured articles; Great Britain ranking first, with exports valued at about $1,225,000,000; and Germany second, with exports valued at $935,000,000.

The Year 1910.—The year 1910 has witnessed unusual variations in different lines of manufactures. During the first half of the year the production of pig-iron broke all records and was at the rate of 2,500,000 tons a month, equivalent to a production of 30,000,000 tons annually. The previous high record of similar semi-annual output was during the second half of 1909, when the production of pig-iron reached 14,773,000 tons, the total annual output of that year being 25,795,471 tons.

The latter half of the year has witnessed a marked falling off in orders, and justifies the statement that the great increase of productive capacity has led to an overproduction, which will affect the manufacture for some time to come. A British trade journal has recently stated the situation as follows:

> The United States Steel Corporation has disregarded economic conditions in the construction of new plants. The United States now has a blast furnace capacity equal to the production of between 32,000,000 and 33,000,000 tons of pig-iron a year. There is no visible sign of a domestic demand in the United States good enough for more than 26,000,000 tons annually. With a steel works capacity of about 30,000,000 tons there is no trade in sight for more than 23,000,000 tons annually. The situation is unique in the annals of industrialism. Iron and steel plants—not obsolete

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[1] In the eight months of the calendar year 1910, ending with Aug., manufactures, partially prepared or ready for consumption, comprised 542¾ millions in value out of a total of 1,027 millions of exports, or 52.8 per cent of the total. The proportion of agricultural exports in our foreign trade has correspondingly declined. The statistics indicate the economic revolution progressing in the United States, which is requiring more and more of its production of food stuffs to feed the increasing number of people engaged in manufactures.

plants, but costly, new, and up to date concerns—are standing idle. Despite this, stocks are accumulating. With the exception of bars, tubes, tin plates, and rails, the prices of all important iron and steel products are falling. Competition is acute. In many lines prices are down at bare cost of manufacture. Roughly, the aggregate productive capacity of the United States steel industry has been increased by twenty-five per cent since 1906. But it is questionable whether this year's output of iron products will be as great as that of 1906 or 1907. Prices are not nearly so high (save in the case of specialties) for finished iron and steel products now as they were during the boom of 1906–7. But the cost of raw material is considerably higher. Thus the American steel industry, while carrying a much bigger load of capital charges, is paying more for its raw materials and labor and getting less for its finished goods. And somewhere between a quarter and a third of the productive capacity of the trade is idle.

With reference to steel rails, it is stated that the productive capacity of the trust and independent concerns has been increased to 7,000,000 tons of steel rails within the last three years, while the actual consumption is indicated by the following table:

	New railroad mileage.	Total output of rail mills, tons.[1]
1905	4,388	3,375,928
1906	5,623	3,977,887
1907	5,212	3,633,654
1908	3,214	1,921,611
1909	3,748	3,062,582

In this connection it is interesting to note a remarkable increase in the production of iron and steel in France and Germany. The French production of pig-iron, after being more or less stationary for a period of fifteen years, that is from the period 1880 to 1895, has increased in the last fifteen years from about 2,000,000 tons to 3,630,000 tons, which was the production in 1909. This is an increase of forty-five per cent. The German production of pig-iron increased in the same period from 6,556,000 tons to 12,917,000 tons, an increase of forty-nine per cent.

In all lines of textile manufacture the year has been uncertain and unsatisfactory. In the cotton manufacture organized curtailment in the mills, both North and South, has equalled one twelfth of the output. This unsatisfactory condition was due in the first instance to the high prices and fluctuating values of the raw material, following the shortest crop for a number of years. Manufacturers complained that it was impossible to produce staple cottons at a profit on the basis of value prevailing for goods on the one hand, and for the raw material on the other; and curtailment of operations and reduction of dividends confirm this conclusion. On the other hand, dealers in cotton goods maintain that the restricted market has been due to a general advance in prices of goods which took place in the early months of the year.

The wool manufacture has suffered a depression in the year 1910 quite as great as that in cotton, and not so easily accounted for, as the supplies of raw material have been normal. Increase in prices of many lines of woolen goods has undoubtedly restricted consumption. This increase, as in the case of cotton manufactures, has been justified not only by the high cost of the raw material but by increases in wages. During the summer months it is stated that not more than one half the machinery of the worsted manufacture in the New England states was in operation.

The silk manufacture has been in a situation very similar to that of the cotton and woolen manufactures, and for several months in the year the production in the mills has been estimated to be less than thirty per cent of their capacity. This situation in silk can only be explained by the decrease in the consumptive power of the people, owing to the general rise in the cost of living, which has continued to be the experience of this and the preceding year.

The shoe and leather manufactures have been in a depressed condition throughout the year, with overproduction given as the most obvious of the causes. During the summer and early fall, the New England shoe factories were running not more than one half their normal capacity. (See also, XXIV. *Industrial Chemistry.* XXIX. *Chemical Engineering, Automobiles.*)

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[1] Home and export account combined.

Rhode Island.—The only state for which the statistics of manufactures, as shown by the census of 1910, have been announced is Rhode Island. That state manufactured $279,438,000 worth of goods in 1909. This was a growth of thirty-eight per cent within five years, the total value in 1904 being only $202,110,000. In the same period the number of establishments increased from 1,617 to 1,944. There were 112,565 employees in 1909, as against 97,318 in 1904, while salaried officials increased from 5,420 to 7,297. An increase of thirty-four per cent is shown in the capital invested in the five years, the sum growing from $215,901,000 to $289,416,000. The value of the products of the manufactures of the city of Providence in 1909 was $120,328,000, a growth of thirty-one per cent in the five years.

Bibliography.—The Bibliography of Manufactures in 1910 consists mainly of the reports and proceedings of the organizations representing the different industries, most important of which are the *transactions* of the American Cotton Manufacturers' Association, C. J. H. Woodbury, secretary, Boston, Mass. See also *Bulletin* of the National Association of Wool Manufacturers, Boston; *Report* of the Silk Association of America, New York; *Weekly Bulletin and Report* of the American Iron and Steel Association, Philadelphia; *Report* of the National Association of Manufacturers, New York.

XXI. TRADE, TRANSPORTATION, AND COMMUNICATION *

EMORY R. JOHNSON AND G. G. HUEBNER

MERCHANT SHIPPING

Tonnage Afloat.—The total documented merchant marine of the United States for the year ending June 30, 1909, comprised 25,688 vessels of 7,388,755 gross tons. This aggregate tonnage exceeds that of the preceding year by 23,310 gross tons, that of 1905 by 932,212, that of 1900 by 2,173,916, and that of 1895 by 2,752,795. The following table shows, however, that the registered tonnage, indicating the merchant fleet engaged in the foreign trade, comprised but 887,505 gross tons, while the tonnage of enrolled vessels aggregated 6,381,053 gross tons, and that of licensed vessels of under twenty tons 120,197. The American merchant marine engaged in the coastwise and inland trade has increased for many years, while that engaged in the foreign trade has gradually declined from a maximum of 2,642,628 tons in 1861. The year 1909 witnessed a continuation of this general downward tendency.

Year Ending June 30.	Registered Vessels.		Enrolled Vessels.		Licensed Vessels under 20 Tons.		Total Documented Merchant Marine.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
1880	2,378	1,352,810	16,410	2,649,353	5,924	65,871	24,712	4,068,034
1890	1,527	946,695	15,153	3,201,481	6,877	85,918	23,467	4,424,497
1895	1,260	838,187	14,408	3,705,104	7,572	92,669	23,240	4,635,960
1900	1,330	826,694	13,786	4,239,569	8,217	98,576	23,333	5,164,839
1905	1,372	954,513	14,126	5,391,802	9,183	110,228	24,681	6,456,543
1908	1,591	940,068	14,115	6,307,939	9,719	117,438	25,425	7,365,445
1909	1,633	887,505	14,072	6,381,053	9,983	120,197	25,688	7,388,755

Geographical Distribution. — The documented shipping of the United States for the year ending June 30, 1909, was distributed among geographical divisions and classes of vessels as follows:

Geographical Division.	Sailing Vessels.		Steam Vessels.		Canal Boats.		Barges.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
Atlantic and Gulf	8,525	1,444,723	6,095	1,659,293	188	22,395	2,395	674,180	17,203	3,500,394
Porto Rico	73	7,108	10	1,632	....	......	.....	....	83	8,740
Pacific Coast	713	311,835	1,878	1,529,107	....	......	787	74,415	3,378	915,357
Hawaii	12	8,919	31	10,201	....	......	.....	....	43	19,120
Northern Lakes	389	238,491	1,982	2,399,925	557	58,753	271	85,312	3,199	2,782,481
Western Rivers	.....	....	1,645	149,066	....	......	137	13,597	1,782	162,663
Grand Total	9,712	1,711,076	11,641	4,749,224	745	80,951	3,590	847,504	25,688	7,388,755

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* The section on the Merchant Marine was contributed by E. T. Chamberlain.

The tonnage of sailing vessels has gradually declined from 4,662,609 in 1861, and that of canal boats from 820,328 tons in 1873. The tonnage of steam vessels and barges has steadily increased. The Atlantic and Gulf coasts lead in gross tonnage, with the Great Lakes second, the Pacific Coast third, the Western Rivers fourth, Hawaii fifth, and Porto Rico sixth. The tonnage distributed among the leading customs districts as follows:

New York	1,611,024
Cuyahoga, Ohio	887,777
Duluth	802,726
San Francisco	472,799
Puget Sound	301,653
Philadelphia	276,348
Boston	209,628
Baltimore	206,231
Buffalo Creek, N. Y.	251,307
Detroit	166,370
Bath, Me.	102,619

Undocumented Craft.—A considerable portion of the American merchant marine consists of undocumented craft. Such craft consisted chiefly of "yachts, harbor craft, canal boats, and barges operating on the rivers and other inland waters." The United States census office reported them for the fiscal year 1906 as follows:

Class.	No. of. Vessels.	Gross Tonnage.
Aggregate	19,497	6,579,402
Active	19,122	6,531,214
Steam	1,250	46,705
Sail	533	5,355
Unrigged	17,339	6,479,154
Idle	375	48,188
Steam	107	7,689
Sail	33	559
Unrigged	235	39,940

Relative Decline of American Deep-sea Shipping.—In the fiscal year 1909 but 9.5 per cent of the foreign trade of the United States was carried in American vessels, as compared with from 66.5 per cent to 92.5 per cent prior to the Civil War. The decline of the American deep-sea marine is shown in the following table:

Year.	Total Imports and Exports.				
	In Cars and Other Land Vehicles.	By Sea.			Per cent in American Vessels.
		American Vessels.	Foreign Vessels.	Total.	
1821	....	$113,201,462	$14,358,235	$127,559,697	88.7
1826	....	150,331,636	12,238,163	162,569,799	92.5
1840	....	198,424,609	40,802,856	239,227,465	82.9
1850	....	507,247,757	255,040,793	762,288,550	66.5
1880	$20,981,393	258,346,577	1,224,265,434	1,482,612,011	17.4
1900	154,895,650	195,084,192	1,894,444,424	2,089,528,616	9.3
1905	242,265,329	290,607,946	2,103,201,462	2,393,809,408	12.1
1908	261,861,952	272,512,228	2,520,740,958	2,793,253,186	9.8
1909	253,580,297	258,657,217	2,462,693,814	2,721,351,031	9.5

Nationality.—The nationality of the leading foreign vessels entered and cleared at American ports in the year ending June 30, 1909, was as follows:

Flag.	Entered.	Cleared.	Flag.	Entered.	Cleared.
	Tons.	Tons.		Tons.	Tons.
British	19,465,278	18,995,611	Japanese	198,007	133,518
German	3,851,812	3,779,412	Russian	97,473	99,791
Norwegian	2,287,202	2,315,876	Swedish	41,788	42,680
Dutch	882,680	884,265	Portuguese	14,800	13,198
French	854,908	844,856	Other countries	100,488	96,111
Italian	776,961	782,626			
Danish	489,334	465,415	Total Foreign	30,286,674	29,704,756
Spanish	373,271	364,537			
Belgian	340,646	358,986	American	8,771,464	8,491,725
Austrian	317,752	335,519			
Cuban	194,274	192,355	Grand total	39,058,138	38,196,481

Total Shipping in Foreign Trade entered and cleared at American ports in the year ending June 30, 1909, was divided as follows:

	Entered.	Cleared.
Atlantic Ports.....	21,038,017	20,138,467
Northern Lake Ports	8,815,008	8,592,425
Gulf Ports.........	5,421,678	5,747,862
Pacific Ports.......	3,783,435	3,717,727
Total...........	39,058,138	38,196,481

This was divided among the leading ports as follows:

Port.	Entered.	Cleared.
	Tons.	Tons.
New York...	12,528,723	11,866,413
Northern Lake Ports	8,815,008	8,572,425
Boston.............	2,852,016	1,981,812
Philadelphia.........	2,274,625	2,325,386
New Orleans.......	2,017,854	2,168,816
Puget Sound.......	1,920,167	2,068,824
Galveston..........	1,094,400	1,339,337
Baltimore..........	1,102,479	1,102,226
San Francisco......	905,596	868,937
Mobile.............	603,129	666,384
Norfolk and Portsmouth...........	165,525	611,616
Pensacola..........	347,160	404,676
Key West..........	357,045	345,573
Savannah..........	221,494	448,390
Portland...........	337,240	332,818
Newport News......	287,314	359,702
Pearl River........	274,526	344,905
Passamaquoddy, Me.	248,243	301,293
Charleston.........	176,082	48,352
Brunswick.........	50,316	154,408
Other ports........	2,479,196	1,964,488
Total............	39,058,138	38,196,481

Tonnage Built.—During the fiscal year 1909 1,247 vessels of 238,090 gross tons were constructed in American shipyards as follows:

	1908.		1909.	
	No.	Gross Tons.	No.	Gross Tons.
Atlantic and Gulf Coast..................	655	209,778	582	108,904
Northern Lakes.......	216	341,165	174	100,402
Pacific Coast	359	57,050	276	22,759
Western Rivers..................................	207	6,114	207	5,940
Porto Rico	10	109	8	85
Total Construction	1,457	614,216	1,247	238,090

The sharp decline in 1909, as compared with 1908, was due partly to local causes and partly to the general business depression which affected shipbuilding throughout the world. The output in 1908 was the largest in our history, while that in 1909 was the smallest since 1898.

Of the total tonnage constructed in 1909 136,923 gross tons were built of steel. Thirty-one vessels, moreover, had a tonnage of over 1,000 tons each, and comprised 117,499 of the total tonnage constructed. Of the aggregate tonnage built 148,208 tons were steam vessels, 58,640 barges, 28,950 sailing vessels, and 2,292 canal boats.

The year 1909 was far below the normal, and the great shipyards on the seaboard were largely dependent on government contracts for the construction of war ships. In the fiscal year 1910 there has been a revival of commercial work. On July 1, 1909, 333,032 tons were under contract and construction, 168,848 of which being merchant, and 164,184 government vessels. It is expected that the output of the year 1910 will exceed 325,000 tons.

Steamers, Size and Speed.—The size and speed of ocean-going steamers flying the United States flag vary so greatly that any average is misleading. The largest American registered steam vessel is still the *Minnesota*, built at New London, Conn., in 1904–05. It is 630 feet long, seventy-three feet six inches beam, fifty-six feet in depth, and has a gross tonnage of 20,718 tons. On June 30, 1909, the registered fleet contained but eight other steamships with a gross tonnage in excess of 10,000 tons. A large number, however, ranged from 4,000 to 9,000 tons. The largest steel steamers under construction in 1910 ranged from 4,000 to 7,500 gross tons. The maximum size of American ocean steamships is far less than that of Great Britain and

Germany. The Cunard Steamship Company operate two vessels of 32,500 gross tonnage, the *Mauretania* and *Lusitania;* and the *Olympic* and *Titanic* of the White Star Line, now under construction, each has a gross register of 45,000 tons.

In the coastwise trade steamers of from 3,000 to 6,500 tons are considered large. A modern example is the *Creole* of the Southern Pacific Company's Atlantic fleet. It was built in 1907 with a gross tonnage of 6,387 and is 407 feet long, 53 feet beam, and 26 feet deep. On the Great Lakes the typical steamer of to-day is from 5,000 to 8,000 tons gross register. A good example is the *Thomas F. Cole*, of the Pittsburg Steamship Company. It is a bulk freighter constructed in 1907, with 605 feet 5 inches length, 58 feet beam, 32 feet depth, and 7,268 tons gross register.

The speed of the largest American ocean-going steamers varies from 12 to 21 knots per hour. In the fiscal year 1909 the registered fleet contained two steamers with a speed of 21 knots, four of 20 knots, six of 18, eight of 17, fourteen of 16, thirty of 15, thirty-one of 14, thirty of 13, and twenty-seven of 12 knots. All other registered vessels had either a tonnage of less than 2,000 tons or a speed of less than 12 knots. The largest lake steamers do not attain a high rate of speed as they are bulk freighters, constructed for capacity rather than for swiftness.

Ship Subsidies and Mail Payments.—The total sum paid by the United States Government for mail pay in 1908 was $2,695,287. Of this $1,228,032 was paid to foreign ships. The total paid as "subsidies" under the act of 1891 was $1,189,204. The American Line received $737,332, the New York and Cuba mail $203,115, the American mail $105,667, Red "D" $105,128, and Oceanic $37,962. The American Line is paid $4 per mile for 20-knot steamers to Southampton; the New York and Cuba mail $1 for 16 to 18-knot steamers to Cuba and Mexico; the American mail and Red "D" $1 for 14-knot steamers to Jamaica and Venezuela (66⅔ cents for two 12-knot vessels), and the Oceanic Line receives $1 per mile for one 14-knot steamship to Tahiti.

American mail subsidies are paid under the act of March 3, 1891, which empowers the postmaster general to make contracts running from five to ten years for the carriage of mails upon steamers of American register, officered by Americans, and manned by a crew at least one half of whom, after the first five years of the contract, must be composed of American citizens. Mail steamers are divided into four classes, according to their size, speed, and the materials of their structure.

The United States Government aids the merchant marine in various additional ways. (1) The tonnage duties are light. They, moreover, favor American vessels, inasmuch as there are no tonnage duties on vessels in the coastwise trade, and are three cents instead of the usual six cents on vessels in Caribbean waters. (2) The various departments of the United States Government render invaluable assistance, chiefly the coast survey, lighthouse service, weather bureau, hydrographic office, and life-saving service. (3) The shipbuilding industry is aided by (*a*) confining the coastwise trade to American vessels; (*b*) confining American registry to American-built vessels with certain exceptions; (*c*) permitting the importation of building materials free of duty in case of vessels which do not enter the coastwise trade for more than two months annually, and (*d*) giving heavy naval contracts to American shipyards.

Foreign Subsidies.—American mail subsidies are small when compared with the subsidies paid by various foreign countries, as shown by the following data:

FOREIGN SUBSIDIES AND OTHER AID TO SHIPPING.

Great Britain and Colonies:	
Subsidies and mail pay (1908)	$3,320,454
Cunard admiralty subvention (1909)	729,000
Royal naval reserves (1909–10)	1,783,620
Canadian subsidies and mail pay (1910)	1,581,800
Canadian fisheries bounties (1909)	160,000
Australian and New Zealand subsidies and mails (1909)	1,263,600
Cape Colony subsidy (1909)	656,910
Jamaica subsidy (1909)	194,000
Total	$9,689,384

France:

Mail subsidies (1908)	$5,217,037
Navigation and armament bounties (1908)	6,079,500
Shipbuilding Bounties (1908)	2,007,200
Fisheries bounties	120,000
Total	$13,423,737

Japan:

Mail subsidies (1910)	$4,379,000
Shipbuilding bounties (1908)	997,700
Fisheries bounties	37,000
Total	$5,413,700

Italy:

Mail subsidies (1908)	$2,328,917
Navigation bounties (1909)	677,734
Shipbuilding bounties (1909)	866,266
Total	$3,872,917

Spain:

Mail subsidies (1910)	$1,858,186
Navigation bounties (1910)	1,291,826
Shipbuilding bounties (not ascertained)	
Total	$3,150,012

Austria-Hungary:

Austrian-Lloyd subsidy (1908)	$1,450,400
Suez Canal refunds (1908)	375,000
Navigation and shipbuilding bounties (1908)	880,000
Hungarian mail contracts (1908)	279,130
Total	$2,984,530

Germany:

Mail subsidies (1908)	$1,706,460
Mail pay (1907)	594,569
Total	$2,301,029

Russia:	Total (1908)	$1,878,328
Norway:	Total (1908–09)	1,102,143
Netherlands:	Total (1908)	880,011
Sweden:	Total (1908–09)	277,752
Denmark:	Total (1902)	145,000
Belgium:	Total (1908)	55,970
Portugal:	Total (1908–09)	50,000
Chile:	Total (1908)	253,195
Mexico:	Total (1908)	75,000
Egypt:	Total (1908)	54,512
Brazil:	Total (1908)	1,300,000
	Grand Total	$46,907,220

The foreign subsidies take many forms chief among them being (1) mail subsidies, (2) shipping or navigation bounties, (3) naval subventions, (4) naval reserves, (5) fishing bounties, (6) construction bounties, (7) canal refunds, (8) trade subsidies, (9) state loans, (10) exemption from harbor dues, (11) pilotage refunds, and (12) tariff refunds.

The two most important changes in 1909–10 were made in Japan and Spain, where new laws were enacted. These laws conform to the general tendency to increase specific mail subsidies at the expense of general shipping bounties.

THE UNITED STATES MERCHANT MARINE IN 1910

E. T. Chamberlain

Merchant shipping documented in the customs houses of the United States on June 30, 1910, comprised 25,740 vessels of 7,508,082 gross tons (ton = 100 cubic feet). The total tonnage of the world recorded in *Lloyd's Register* for the same date was 41,914,765 tons, of which 19,012,294 tons were under the British flag and 4,333,186 under the German flag. American shipping, however, differs from that of other maritime powers in that it is almost wholly devoted to domestic transportation. Thus forty per cent of it is employed on the Great Lakes and the Mississippi River and its tributaries. On the Great Lakes alone we have an aggregate of 3,273 vessels of 2,895,102 tons—a merchant fleet greater and more efficient than that under any other flag but the British or German. Steamers of 8,000 tons have been built for this trade, and the only limits to shipbuilding there are those fixed by Federal improvement of channels and harbors. Our tonnage registered for the foreign trade amounts to only 791,825 gross tons in 1910, and a considerable portion of this is made up of vessels which have outlived their usefulness. Last year American ships carried only 8.7 per cent of our exports and imports. The four American Line steamships to Southampton, in 1895, constituting the fastest mail and best transatlantic passenger fleet, are now the only American vessels regularly crossing the Atlantic and are outclassed by British, German, and French lines. Only five American steamships regularly cross the Pacific to the Orient (excluding the government's fleet of army transports to Manila), while the American flag is seen only rarely on a chance sailing vessel in the harbors of Australia, Africa, and South America below the Caribbean. Transportation between our own ports, known as the coasting trade nearly from the beginning of government, has been restricted to vessels built in the United States, but excluding shipping of the Great Lakes already mentioned, the coasting trade has not increased as rapidly relatively as representative American industries or as the shipping of Great Britain, Germany, and Japan. Assuming, however, that the reservation of the coasting trade to American vessels will be maintained when the Panama Canal is completed, and that vessels in that trade will be exempt from tolls—in view of our assumption of the entire cost of the canal—a more rapid growth in our mercantile marine during the next decade seems a certainty. This growth, however, will be confined to the domestic trade. The acquisition of Hawaii, Guam, the Philippines, Porto Rico, and of the control of the Canal zone, comprising an empire, has not been followed thus far by the general establishment of subsidized American mail steamship lines for political and military reasons in conformity with a like policy adopted by other nations with oversea possessions. Several bills to this end have passed the Senate several times, and the House once since the Spanish-American War, and have been recommended by Presidents McKinley, Roosevelt, and Taft.

The largest annual output of our shipyards was 614,216 tons in the fiscal year 1908. Last year the output was 342,068 tons, of which one half was built on the Great Lakes and the Mississippi and tributaries. Three fourths of the tonnage built was steam, sail vessels aggregating only 19,350 tons. Generally the smaller types of sail vessels are now equipped with motors. Steel was the principal material of three fourths of the year's construction, and in July, 1910, steel ship plates were selling at the same price, $31.64, in Pittsburg, Pa., and Middlesborough, Eng.

The figures given throughout do not include canal boats used within state limits, small craft under five tons, and pleasure yachts.

American capital is invested to a considerable extent in vessels under foreign flags. Thus the Standard Oil Company and the United Fruit Company own considerable fleets under the British, Belgian, and Norwegian flags. (See I, *International Statistics Table.*)

EXTERNAL COMMERCE OF THE UNITED STATES

Exports to Foreign Countries.—During the year 1908 and 1909 there was a general decline in almost the entire export trade of the United States as compared with the preceding two years. The export trade was distributed as follows in the years named:

EXPORTS OF MERCHANDISE BY CONTINENTS

CONTINENT.	1908.	1909.	1910.
Europe	$1,283,600,155	$1,146,755,321	$1,135,914,551
North America	324,674,719	309,476,694	385,520,069
South America	83,583,874	76,561,680	93,246,820
Asia	101,784,832	71,792,187	60,861,813
Oceania	46,789,201	41,389,788	50,890,087
Africa	20,340,565	17,035,434	18,551,380
Total	$1,860,773,346	$1,663,011,104	$1,744,984,720

The decline was due chiefly to the financial depression of 1907–08. Its first effect was to cause abnormally large exports in 1907 and part of 1908 to meet the existing financial stringency, and to find a foreign market for goods formerly dependent upon the domestic market. Its consequent effect in 1909 was a decline in exports due to halted business at home during 1907 and 1908, the overloaded state of the foreign market and diminished purchasing power abroad. The decline in 1909 was also partly due to the increased demand at home owing to better financial, industrial, and commercial conditions; partly to lower export prices than in 1908, and partly to the large home demand for the leading food-stuffs as compared with their production. In the aggregate the export trade declined from $1,880,000,000 in 1907, and $1,860,000,000 in 1908 to $1,663,000,000 in 1909. In 1910, however, it increased to $1,744,984,720 with the general revival in business.

The total amounts exported to each foreign continent is shown in the table on page 527. The relative proportions to each are:

Europe, 65.1 per cent; North America, 22.1 per cent; South America, 5.3 per cent; Asia, 3.4 per cent; Oceania, 2.9 per cent; and Africa, 1.1 per cent. In recent years the relative position of the European market has declined somewhat as compared with North and South America. The decline in 1909, however, was with few exceptions general throughout the world. The total exports of merchandise from the United States to the leading individual markets of Europe and North and South America were as follows:

Market.	1908.	1909.	1910.
Germany	$276,123,468	$235,324,140	$249,555,926
Great Britain	580,663,522	514,627,365	505,552,871
France	116,922,089	108,764,262	117,627,466
Canada	167,035,947	163,448,656	215,990,021
Netherlands	102,206,184	95,012,366	84,937,878
Italy	54,217,394	58,509,595	53,467,053
Mexico	55,509,604	49,793,323	58,193,704
Belgium	52,940,514	45,093,003	41,116,585
Cuba	47,161,306	43,913,356	52,858,758
Argentina	31,858,155	33,712,505	40,694,941

The decline of 1909 was particularly noticeable in the United Kingdom. Likewise the exports to China declined from $53,453,000 in 1905 to $22,343,657 in 1908; $19,420,024 in 1909, and $16,320,612 in 1910. Those to Japan fell from $51,719,863 in 1905 to $41,432,327 in 1908; $26,691,613 in 1909, and $21,959,310 in 1910. On the contrary, as shown in the above table, the exports to Argentina and Italy increased even in 1909, and those to Canada suffered but slightly. With few exceptions, such as Germany, the decline of 1909 continued in the European market during the fiscal year 1910. The increase of exports in 1910 was chiefly in the markets of North and South America, Oceania, and Africa.

In 1909, 40.98 per cent of the commodities, not including prepared foodstuffs, consisted of manufactures. Their aggregate value was $671,416,014, as compared with $750,575,841 in 1908. The relative importance of manufactures as compared with agricultural exports has in recent years increased. Twelve per cent of the exports were manufactures in 1880, 35.37 per cent in 1900, 39.9 per cent in 1906, 40.91 per cent in 1908, and 40.98 per cent in 1909.

Ports of Export.—The leading individual ports of export in 1910 were New York, $651,986,356; Galveston, $173,178,992; New Orleans, $140,376,560; Philadelphia, $73,266,343; Baltimore, $77,381,507; Boston, $70,516,789; Savannah, $63,428,155; Detroit, $38,368,872; San Francisco, $31,180,760; Puget Sound, $30,121,004; Mobile, $27,526,245; Buffalo Creek, N. Y., $34,788,677. The shipments from Puget Sound ports declined from $44,032,767 in 1908.

In addition to the exports of merchandise, gold valued at $118,563,215 and silver at $55,286,861 were exported in 1910.

Exports to American Dependencies.—The following table shows the shipments of domestic merchandise to our noncontiguous territories:

	1909.	1910.
Alaska	$17,186,445	$17,972,647
Hawaii	17,193,219	20,289,017
Porto Rico	23,272,170	26,478,106
Philippines	11,182,175	16,788,909
Guam	200	59
Midway Islands	....	....
Tutuila	40,583	90,175
Total	$68,874,792	$81,618,913

Contrary to the general decline suffered by the export trade, the shipments from the United States to her outlying possessions were greater in 1909 than ever before in her history, and in 1910 the increase became still more rapid. The leading items were iron and steel goods, cotton goods, mineral oils, lumber, breadstuffs, meats, and rice. In addition to domestic merchandise, the shipments to these markets in 1910 included foreign merchandise valued at $1,652,060 and gold and silver valued at $1,667,001.

Imports from Foreign Countries.—The same forces which affected the export trade in the years 1907 to 1910 are influencing the import trade. As is seen in the following table, however, the results were not identical. The financial depression immediately affected the purchasing power of the American market and resulted in a heavy decline of from $1,434,000 in 1907 to $1,194,000 in 1908. The recovery of business conditions, however, caused an increase in imports to $1,311,920,224 in 1909, and $1,557,819,988 in 1910. Imports in 1909 exceeded those of 1908 by $117,500,000, but were $122,500,000 less than those of 1907. In 1910 they reached a new maximum in the trade of the United States.

IMPORTS OF MERCHANDISE BY CONTINENTS

CONTINENT.	1908.	1909.	1910.
Europe	$608,014,147	$654,322,918	$806,271,380
North America	238,815,898	253,999,920	306,767,486
South America	124,998,590	163,878,724	196,164,786
Asia	181,167,616	197,548,027	194,026,802
Oceania	25,054,866	27,062,108	37,099,795
Africa	16,290,675	15,108,727	17,489,739
Total	$1,194,341,792	$1,311,920,224	$1,557,819,988

The above table shows that the increase in 1909 was general everywhere, except in Africa, and that in 1910 it was almost universal. The relative proportions imported from each continent in 1910 were from Europe 51.7 per cent; North America, 19.7 per cent; South America, 12.6 per cent; Asia, 12.5 per cent; Oceania, 2.4 per cent; and Africa, 1.1 per cent.

The values of the imports of merchandise from the leading individual countries in recent years were as follows:

COUNTRY.	1908.	1909.	1910.
Great Britain	$190,355,475	$208,612,758	$271,029,772
Germany	142,935,547	143,525,828	168,806,237
France	101,999,541	108,387,337	132,363,346
Brazil	74,577,864	98,053,229	108,154,491
Cuba	83,284,692	96,722,193	122,528,037
Canada	75,131,666	79,317,055	95,128,310
Japan	68,107,545	70,392,722	66,398,761
Italy	44,844,174	49,287,894	49,868,367
Mexico	46,945,690	47,712,214	58,795,943
British India	44,465,398	43,547,347	45,320,268

But one (Japan) of the ten leading countries in the import trade shipped less to the United States in 1910 than in the preceding year.

In 1910, 36.47 per cent of the imports consisted of crude materials for use in manufacturing, 23.44 per cent of finished manufactures, 18.48 per cent of manufactures for further use in manufacturing, 11.37 per cent of foodstuffs partly or wholly manufactured, and 9.51 per cent of crude foodstuffs. Imports of crude materials and semi-manufactures for use in American factories are chiefly responsible for the increase in 1909 and 1910, while foodstuffs, crude and manufactured, decreased as compared with 1908.

A large portion of imported commodities consists of tropical and subtropical articles, such as coffee, sugar, silk, rubber, tobacco, fruits, fibers, tea, and vegetable oils. In 1909, they were valued at $582,169,468, or more than ever before in our history.

The import trade is distributed as follows:

IMPORTS BY GROUPS OF PORTS

	1908.	1909.	1910.
Atlantic Ports	$907,184,563	$1,018,847,312	$1,228,010,123
Pacific Ports	81,981,637	85,961,830	88,676,730
Northern Border and Lake Ports	114,873,922	112,690,231	129,118,741
Gulf Ports	59,340,735	59,565,904	68,704,561
Interior Ports	20,092,391	18,676,945	20,398,635
Mexican Border	10,868,544	16,178,002	22,911,198
Total	$1,194,341,792	$1,311,920,224	$1,557,819,988

The preponderance of the import trade in the North Atlantic ports, and the slight import trade in the Gulf ports are striking facts. The port of New York alone imported articles in 1910 valued at $935,990,958, or sixty per cent of the nation's total import trade. The other leading importing ports are Boston, $129,006,184; Philadelphia, $89,253,451; San Francisco, $49,998,111; New Orleans, $55,712,027; Puget Sound, $28,910,491; and Baltimore, $29,900,618.

In addition to the imports of merchandise, gold valued at $43,339,905 and silver at $45,217,194 were imported in the fiscal year 1910.

The receipts of domestic merchandise from our noncontiguous possessions is shown in the following table:

	1908.	1909.	1910.
Alaska	$10,917,797	$13,055,355	$12,349,462
Hawaii	41,595,708	40,395,040	46,161,288
Porto Rico	25,885,776	26,391,338	32,095,788
Philippines	10,164,223	9,433,986	17,317,897
Guam	....	....	....
Tutuila	66,479	67,100	....
Total	$88,629,983	$89,342,819	$107,924,435

In 1910 they were valued at $107,924,435 or more than in any previous year, and $26,325,522 in excess of the return shipments from the United States. In the trade with Alaska and the Philippine Islands the balance is in favor of the United States, while in the trade with Hawaii and Porto Rico it is in favor of the islands. The leading commodities shipped to the United States are sugar, Manila hemp, canned salmon, cigars and tobacco, coffee, and fruits. In 1910 these possessions, likewise, shipped $113,004 foreign merchandise, and $22,855,606 in gold and silver to the United States.

The Balance of Trade.—The general movement of the balance of trade since 1900 is shown in the following statement:

Fiscal Year.	Merchandise.			Merchandise and Specie.		
	Imports.	Exports.	Excess of Exports.	Imports.	Exports.	Excess of Exports.
1900	$849,941,184	$1,394,483,082	$544,541,898	$929,770,670	$1,499,462,116	$569,691,446
1901	823,172,165	1,487,764,991	664,592,826	925,609,873	1,605,235,348	679,625,475
1905	1,117,513,071	1,518,561,666	401,048,595	1,198,646,897	1,660,004,502	461,357,605
1906	1,226,562,446	1,743,864,500	517,302,054	1,367,226,716	1,848,307,154	481,080,438
1907	1,434,421,425	1,880,851,078	446,429,653	1,591,878,298	1,988,989,327	397,111,029
1908	1,194,341,792	1,860,773,346	666,431,554	1,387,337,210	1,991,127,472	603,790,262
1909	1,311,920,224	1,663,011,104	351,090,880	1,399,879,023	1,810,225,714	410,346,691
1910	1,557,819,988	1,744,984,723	187,164,732	1,646,377,087	1,918,834,806	272,457,719

The balance of trade turned in favor of the United States during the later seventies, and in but two years (1886 and 1887) since then was it reversed. It gradually increased in magnitude, reaching its maximum in 1901 with a total of $679,625,475. In 1910, exports exceeded imports by $272,457,719, and since 1901 the excess has materially declined. Its temporary volume in 1908 was due to the abnormal decline in imports in that year.

The European and North American markets afford the greatest excess of exports, and the South American and Asiatic markets the greatest shortage. The unfavorable balance in South America is found chiefly in Brazil; while Argentina is a notable exception to the South American trade situation, the United States having a favorable balance of $7,230,000. European nations shipping more than they purchase from the United States in 1910 are Austria-Hungary, Portugal, Russia, Switzerland, Turkey, France, Greece, Norway, and Sweden. The trade balance in the Oceanic and African trade favors the United States.

The chief individual sources of the declining balance of trade are in the United Kingdom, China, and Japan. The favorable balance in the British trade has fallen from $374,000,000 in 1900 to $234,000,000 in 1910. The favorable Chinese balance of 1905 and 1906 has been converted into an unfavorable balance of $13,670,000; and since 1905 imports from Japan have increased, while the exports in return have fallen by nearly one half, so that there is an unfavorable balance of $44,439,000.

EXPRESS COMPANIES

The Interstate Commerce Commission in 1908 reported eighty-five express companies doing an interstate business, but most of them were of minor importance. In 1907 the United States census office reported thirty-four companies which operated over 235,903.14 miles, 214,769.21 of which were rail, 2,204.14 electric, 17,995.74 steamboat, and 1,134.04 stage. In 1909 the mileage covered by the leading express companies was: Adams, 35,000 miles; United States, 34,400; American, 50,800; Wells, Fargo & Company, 61,800; and Southern, 31,400.

In 1907 the total earnings of all express companies were $128,117,176 and their expenses, $115,033,204. The capitalization, income, and dividends of the leading companies in 1909, were:

Company.	Capital.	Gross Earnings.	Net Income.	Earned on Stock.	Regular Dividend.
				Per cent.	*Per cent.*
American	$18,000,000	$31,909,721	$3,823,216	19.3	12.0
Adams	12,000,000	28,853,546	2,859,667	23.8	12.0
United States	10,000,000	16,851,864	893,035	8.9	6.0
Wells, Fargo & Co.*	8,000,000	24,476,432	4,664,379	58.3	10.0

* Capital in 1910 increased to $24,000,000; 300 per cent extra dividend in 1910.

Interstate express rates have since 1906 been subject to supervision by the Interstate Commerce Commission. The classification at present in force is the "Official Express Classification, No. 20," effective Oct. 1, 1910. The principal express tariffs are the "Airy Local and Joint Merchandise Express Tariffs," which have been jointly adopted for shipments between common points. Rates in individual instances have been revised by the Interstate Commerce Commission, the leading cases being Kindel *vs.* Adams Express Company, *et al.*, 13 I. C. C., Rep. 475 (1908); Ullman *vs.* Adams Express Company, 14 I. C. C., Rep. 340 (1908); Maricope County Commercial Club *vs.* Wells, Fargo & Company, 16 I. C. C., Rep., 182 (1909); and Boisé Commercial Club *vs.* Adams Express Company, *et al.*, 17 I. C. C., Rep., 115 (1909).

Intrastate express rates are also subject to commission control or investigation in thirty-four states. Petition has been made to the Interstate Commerce Commission by a large number of trade and business organizations for a general investigation and revision of express rates.

In 1908 the Interstate Commerce Commission reported that five of the large express companies—the Adams, American, Pacific, United States, and Wells, Fargo & Company annually carry 100,000,000 packages of merchandise, and over 20,000,000 packages of money. The complete traffic of all express companies was not reported by the census office in 1907. It, however, reported that thirteen express companies issued 14,014,960 express money orders, valued at $147,346,656; 792,156 travelers' checks, valued at $19,270,513; and 581 letters of credit, valued at $1,558,419.

The express business is at present dominated by six companies, the Adams, American, Pacific, United States, Southern, and Wells, Fargo & Company. The Southern, moreover, is controlled by the Adams Express Company, and the Pacific by the Gould railways and the Union Pacific. In 1907 these six concerns covered 87.5 of the total express mileage, and earned ninety-three per cent of the total gross receipts, and 79.6 per cent of the total net income of all express companies.

THE POST OFFICE

The aggregate mail services in operation throughout the United States on June 30, 1909, are summarized in the following table:

THE MAIL SERVICE IN OPERATION, JUNE 30, 1909

SERVICE.	Number.	Aggregate Length, Miles.	Annual Travel, Miles.	Annual Rate of Expenditure.
Star routes	13,600	177,194.33	91,597,310.75	$6,791,019.18
Special office routes	966	12,710.37	3,171,881.44	32,906.90
Steamboat routes	219	28,314.97	4,733,977.85	694,894.89
Railroad routes	3,316	217,115.907	413,546,194.73	44,885,395.29
Railway mail service (officers and clerks)	16,044	....	....	18,380,725.19
Railway post-office cars	....	....	....	4,721,044.87
Mail-messenger routes	7,700	5,177.35	12,198,245.94	1,508,025.60
Wagon routes (in cities)	320	1,090.41	4,964,137.82	1,530,336.22
Electric and cable-car routes	525	6,969.34	11,939,373.11	643,977.78
Pneumatic-tube routes	6	45.66	....	776,339.04
Mail equipment	....	....	....	538,040.84
Freight on mail bags, postal cards, etc	....	....	....	225,792.97
Miscellaneous expenses	....	....	....	597.60
Total inland service	26,652	448,618.34	549,151,121.64	$80,759,096.37
Foreign mails, aggregate cost	....	2,922,888.16	....	....
Less intermediate service to foreign countries	....	188,222.40	....	2,734,665.76
Total	....	....	....	$83,493,762.13

Cost of Postal Service.—The total amount paid to the railroads in 1909 aggregated $49,869,375; to other domestic means of transportation $12,156,229, and for the transportation of the foreign mail, $2,943,849. The amount paid to the railroads has increased from $37,315,724 in 1900, or by 33.6 per cent. The rate of railway mail pay, however, was reduced in 1907.

The total revenue, expenditures, and deficit of the post office since 1900 is shown in the following table:

YEAR.	Postal Revenues.	Postal Expenditures.	Deficit.
1900	$102,354,579	$107,740,267	$5,385,688
1905	152,826,585	167,399,169	14,572,584
1906	167,932,782	178,449,778	10,576,996
1907	183,585,006	190,238,288	6,653,282
1908	191,478,663	208,351,886	16,873,223
1909	203,562,383	221,004,103	17,441,720

This great increase in expenditures is distributed among the various branches of the postal service as follows:

ITEM.	1900.	1905.	1907.	1909.
Service in post office	$51,214,498	$74,109,740	$83,601,334	$102,091,071
Railway mail service	8,839,767	13,289,368	15,178,375	18,356,800
Rural delivery service	420,499	20,824,269	26,666,889	35,586,780
Railway mail pay	37,315,724	45,040,564	49,758,071	49,869,375
Other means of transportation	7,794,212	11,302,795	12,002,581	12,156,229
Transportation foreign mail	2,155,567	2,832,432	3,031,038	2,943,849

The largest item of expense is the service within the post office, and since 1900 it has increased by 99 per cent. The cost of the railway mail service increased 107 per cent; that of domestic transportation other than rail, 55.9 per cent; transportation of foreign mail, 36 per cent; and the rural mail service from less than $500,000 to over $35,000,000. Railway mail pay in 1909 constituted 22.5 per cent of the total postal expenditure, and increased by 33.6 per cent since 1900, or less than any other leading item of expenses.

In 1909 postal receipts and expenses were distributed among the various classes of mail as follows:

ITEM.	Receipts.	Expenses.	Profit.	Loss.
First-class mail	$132,304,845	$78,630,650	$53,674,195	....
Second-class mail	9,066,044	73,194,071	....	$64,128,027
Third-class mail	25,556,111	28,785,633	....	3,229,522
Fourth-class mail	7,755,922	5,659,732	2,096,190	....
Foreign mail	8,585,564	6,080,554	2,505,010	....
Free congressional mail	....	518,385	....	518,385
Free departmental mail	....	5,219,662	....	5,219,662
Registry service	2,889,913	6,768,437	....	3,878,524
Special-delivery service	1,373,451	1,233,164	140,287	....
Money-order service	3,946,814	4,015,207	....	68,393

The last column (loss) shows the services causing an annual deficit, and the marked loss resulting from second-class mail.

In 1910 steps were taken by the Post Office Department materially to reduce or wholly eliminate the annual deficit.

In 1909 the post office had 60,144 offices. It is estimated that it handled 1,290,000,000 pounds of mail matter, and 554,700,000 pounds of pouches and bags. First-class mail is estimated to have weighed 157,502,610 pounds;

second-class, 792,580,967; third-class, 179,694,654; fourth-class, 58,889,400; free congressional mail, 4,531,080; free departmental mail, 43,092,474; and foreign mail matter, 54,067,099 pounds.

TELEGRAPHS AND TELEPHONES

In 1907 the United States Census Bureau reported that there were twenty-five commercial telegraph and ocean cable systems in the United States. The bureau also reported six wireless telegraph companies with 122 wireless telegraph tower stations, organized for general commercial business; 383,833 single wire miles of railway telegraph lines; and a large mileage of government telegraph in our non-contiguous possessions; and municipal electric fire alarm, and police patrol signaling systems in American cities.

COMMERCIAL TELEGRAPH AND OCEAN CABLE SYSTEMS

	1907.	1902.	1880.
Number of companies or systems	25	25	77
Miles of single wire	1,577,961	1,318,350	291,213
Nautical miles of ocean cable	46,301	16,677	....
Number of messages	103,794,076	91,655,287	31,703,181
Number of employees (average)	28,034	27,627	14,928
Total income	$51,583,866	$40,930,038	$16,696,623
Total expenses	41,879,613	30,948,034	10,822,622
Total assets	261,807,899	195,503,775	97,232,640
Capital stock outstanding	155,089,575	117,053,525	66,529,200
Funded debt outstanding	65,204,000	45,893,000	8,167,493

The Western Union. — The telegraphs of the United States are largely operated by the Western Union Telegraph Company, whose business operations are organized as shown below:

	1909.	1908.	1907.	1906.
Miles of wire	1,382,500	1,359,430	1,321,199	1,256,147
Offices	24,321	23,853	24,760	24,323
Messages	68,053,439	62,371,287	74,804,551	71,487,082
Average toll per message	34.1 c.	33.7 c.	33.7 c.	31.6 c.
Gross revenue	$30,541,072	$28,582,212	$32,856,406	$30,675,654
Total expenses	23,193,966	25,179,215	26,532,196	23,605,071
Net profit	5,610,856	1,670,747	4,904,149	5,742,607
Cash dividends	(3%) 2,739,435	(1¾%) 1,714,571	(5%) 4,868,096	(5%) 4,868,089

The company has issued $99,817,100 in stocks, and a funded debt of $38,645,000. Since Nov. 16, 1909, it has been controlled by the American Telephone & Telegraph Company.

The Postal. — Another important telegraph company is the Postal Telegraph Cable Company, which, in 1909, operated 360,555 miles of wire, and had 30,156 offices. In 1908 it sent 23,341,437 messages.

Telephones.—In 1907 the United States Census Office, for the country as a whole, reported 22,971 telephone systems, including 17,702 independent rural lines. The total telephone single wire mileage was 12,999,369 miles, 486,294 of which was operated by independent rural lines. The total capital stock and bonds outstanding was $814,616,004; total annual income, $184,461,747; and total annual expenses, $140,802,305.

The American Bell.—The dominant company is the American (Bell) Telephone & Telegraph Company, whose present status is shown in the following table:

	1907.	1908.	1909.
Exchanges and branch offices	4,889	5,108	5,043
Miles of wire on poles and in buildings	2,754,571	3,057,138	3,467,092
Miles of wire underground	3,241,471	3,883,051	4,625,047
Submarine wire	11,690	6,322	6,540
Total miles of wire	6,007,732	6,946,511	8,098,679
Total circuits	1,384,175	1,541,727	1,668,211
Total stations	2,727,289	3,035,533	3,215,245
Total employees	90,324	88,274	98,533

The total capital stock and interest-bearing obligations of this company and its various subsidiaries on May 1, 1909, amounted to $592,475,000. All the Bell companies combined annually transmit about 6,105,893,000 messages.

Independent Companies. — Nearly all telephone companies not allied to the American Telephone & Telegraph Company are members of the International Independent Telephone Association, which is particularly strong in the middle and far West. At present they operate about 4,000,000 telephones, transmit about 3,000,000,000 messages, have annual gross earnings of about $105,000,000, and represent a capital investment of about $400,000,000.

RAILROADS

Physical Conditions and Services.— On June 30, 1909, the single track mileage of all American railroads was 236,868.53 miles, an increase of 3,215.18 miles over the mileage of the preceding year. There were 57,212 locomotives in the service of the railways, or 479 more than in 1908; and 2,218,280 cars, 12,901 less than in 1908; 2,073,606 of the cars were in the freight service; 45,584 in the passenger, and 99,090 in company service. The total number of employees was 1,502,823, or 66,548 more than in 1908.

During the year ending June 30, 1909, the railways carried 891,472,425 passengers as compared with 890,009,574 in the previous year. The total freight carried, including freight received from connections, was 1,556,559,741 tons, as compared with 1,532,981,790 in 1908. Tonnage statistics, not including freight received from connecting lines, are not as yet available for the year 1909, but in 1908 the original tonnage of all American railways was 869,797,510 tons.

Revenue.— The revenues received from the various services performed in 1908 and 1909 were as follows:

Item.	1908.	1909.	Proportion to Total Operating Revenues, 1909.
Freight revenue	$1,655,419,108	$1,677,614,678	69.34
Passenger revenue	566,832,746	563,609,342	23.48
Mail revenue	48,517,563	49,380,783	2.03
Express revenue	58,692,091	59,647,022	2.45
Excess baggage revenue and milk revenue (on passenger trains)	12,838,647	13,694,171	.54
Parlor and chair car revenue and other passenger-train revenue	3,480,738	3,989,612	.15
Switching revenue	19,715,089	21,599,256	.87
Special service train revenue and miscellaneous transportation revenue	7,082,526	7,833,852	.31
Total revenue from operations other than transportation	21,225,243	19,756,577	.79
Unclassified	2,238		
Joint facilities revenue—*Dr.*		*500,301*	*.03*
Joint facilities revenue—*Cr.*		2,052,546	.07
Total	$2,393,805,989	$2,418,677,538	100.00

Operating Expenses.—The operating expenses incurred by the railroads in the handling of the above traffic were:

Item.	1908.	1909.	Proportion of Total Operating Expenses, 1909.
Maintenance of way and structure	$329,373,367	$308,450,105	12.76
Maintenance of equipment	368,353,798	363,912,886	15.06
Traffic expenses	48,262,758	49,287,148	2.05
Transportation expenses	868,252,168	814,088,149	33.66
General expenses	55,179,174	63,677,378	2.63
Unclassified	126,611	27,744	.....
Total	$1,669,547,876	$1,599,443,410	66.16

Railway Capitalization.—The total capitalization of railways on June 30, 1909 (par value) was $17,487,868,935, of which $13,711,867,733, or $59,259 per mile was outstanding in the hands of the public. The corresponding capitalization for the year 1908 was (par value) $16,767,544,827; outstanding in hands of public, $12,840,091,462; and capitalization per mile of line, $57,230. The assignment of total capitalization is as follows:

Classes of Securities.	1908.	1909.
Common stock	$5,910,351,430	$6,218,382,485
Preferred stock	1,462,860,893	1,467,896,060
Mortgage bonds	6,610,189,953	6,942,012,066
Collateral trust bonds	1,076,670,441	1,147,377,191
Plain bonds, debentures, and notes	835,551,354	803,537,301
Income bonds	258,584,016	284,497,531
Miscellaneous obligations	268,743,958	316,297,240
Equipment trust obligations	344,592,782	307,869,061
Total capital	$16,767,544,827	$17,487,868,935

The total amount paid in dividends in 1909 was $321,071,626, or 6.53 per cent on the dividend-paying stocks; 35.99 per cent of the outstanding stock, however, paid no dividends. On the previous year $390,695,351 was paid in dividends, or 8.07 per cent on the dividend-paying stock; and 34.31 per cent paid no dividends.

To prevent the overissue of railway securities, the President, on Jan. 7, 1910, recommended to Congress that a railway be prevented from issuing stock "without previous or simultaneous payment to it of not less than the par value of such stock, or any bonds or other obligations (except notes maturing not more than one year from the date of their issue) without the previous or simultaneous payment to such corporation of not less than their par value of such bonds, or other obligations, or, if issued at less than their par value, then not without such payment of the reasonable market value of such bonds or obligations as ascertained by the Interstate Commerce Commission; and that no property, services, or other obligations, shall be taken in payment to such carrier corporation, of the par or other required price of such stock, bond or other obligation, except at the fair value of such property, services, or other thing as ascertained by the commission; and that such act shall also contain provisions to prevent the abuse by the improvident or improper issue of notes maturing at a period not exceeding twelve months from date, in such manner as to commit the commission to the approval of a larger amount of stock or bonds in order to retire such notes than should legitimately have been required." The railway act of June, 1910, does not contain these or other provisions prohibiting overcapitalization. It, however, created a stock and bond commission of experts to investigate questions pertaining to the issuance of stocks and bonds by railroad corporations. This commission has been appointed by the President and is making an investigation.

Various states have made provision for the regulation of railroad capitalization, notably, New York, Georgia, Massachusetts, Oregon, Maryland, New Jersey, Wisconsin, and Vermont. The usual practice, within certain limits, is to have their railroad commission control the issue of securities.

Commercial and Physical Valuation.—The United States Census Office reported the commercial valuation of American railways as of June 30, 1904, to be $11,244,852,000. This aggregate represents only the railway property devoted to transportation, and was arrived at by capitalizing the net earnings of individual railways and railway systems. The definition given to the term "commercial value" was an "estimate placed upon the worth of property regarded as a business proposition." The material used in its determination was (1) the operating and financial accounts of the railways; (2) interrailway contracts and agreements; and (3) the published records of the stock market.

There has been a widespread demand for a "physical valuation" of railways as the basis for rate regulation. A provision for physical valuation of lines engaged in interstate business was considered at length in the last session of Congress, but was rejected from the amended Interstate Commerce Law as finally enacted.

In Minnesota.—In 1909 the railroad and warehouse commission of Minnesota reported the physical valuation of nineteen carrying and six switching or terminal railroads with a line-mileage of 7,596 miles, and a track-mileage of 10,437. The valuation was based upon the estimated cost of reproducing the physical properties, new, and also in their present condition. The valuation was made as of June 30, 1907. The cost of reproduction of all the carrying lines was placed by the commission at $350,106,321, or $33,878.65 per mile. Their present physical value was estimated at $249,858,186, or $29,016 per mile. The commission based the values of land used for right of way, yards, and terminals on what it would cost to acquire it for other than railway purposes. The railway officials wished to base it upon what it would cost to acquire it for railway purposes. According to this method a higher valuation is obtained: cost of reproduction all carrying lines, $397,299,471, or $38,445.38 per mile; present value, all lines, $347,051,336, or $33,583.03 per mile.

Washington.—At about the same time the railroad commission of Washington completed a physical valuation of four railways operating in that State. The purpose of the commission was to find the market value, but in doing so it was thought necessary to determine also their cost of reproduction, original cost, and depreciated value. The results as of June 30, 1908, were as follows:

	Great Northern.	Northern Pacific.	Oregon R.R. & Navigation Co.	Bellingham Bay & B. C. R.R.
Cost of reproduction	$61,674,557	$109,267,909	$15,676,561	$2,292,841
Original cost	47,029,939	85,301,693	14,244,241	1,739,169
Depreciated value	56,887,079	98,016,645	13,933,672	2,029,148
Market value	59,577,212	110,308,450	19,500,000	1,100,000

Other States.—In 1894 the physical valuation of railways in Texas was determined, but the engineer in charge now admits it to be out of date. Physical valuations were also made in Michigan (1900) and in Wisconsin (1903), but as bases for taxation and not for rate regulation.

Railroad Consolidations.—The period subsequent to the financial panic of 1907 was one of many important changes in the financial control of railroads. The extent of the influence exerted over some lines cannot as yet be definitely stated, but in other cases it is more certain. The largest systems with their respective constituent lines are shown in the following table:

	Mileage.	
I. VANDERBILT INTERESTS:		
Boston & Albany	392	
New York Central	3,588	
Lake Shore & Mich. South'n	1,663	
Michigan Central	1,746	
New York, Chi. & St. L.	560	
Lake Erie & Western	886	
Big Four (Cleveland, Cincinnati, Chi. & St. L.)	1,982	
Pittsburg & Lake Erie	191	
Chicago, Indiana & South'n	329	
Other affiliated eastern lines	1,763	
Chicago & Northwestern	7,803	
Western Maryland	575	
Toledo & Ohio Central	444	
		21,922
II. PENNSYLVANIA INTERESTS:		
Pennsylvania Lines	11,137	
Norfolk & Western	1,990	
		13,127
III. MORGAN INTERESTS:		
Erie Railroad	2,532	
Père Marquette	2,328	
Cincinnati, Hamilton & Dayton	1,039	
Southern Railway System	8,627	
Cincinnati, New Orleans & Texas Pacific	335	
Mobile & Ohio	1,114	
Atlantic Coast Line System	6,818	
Louisville & Nashville	4,590	
Chicago & Great Western	1,487	
		28,870
IV. GOULD INTERESTS:		
Wabash System	2,663	
Wheeling & Lake Erie	458	
Missouri Pacific System	3,931	
St. Louis, Iron Mountain & Southern	3,288	
St. Louis Southwestern	1,576	
Texas & Pacific	1,991	
Internat. & Gt. Northern	1,159	
Denver & Rio Grande	2,778	
Western Pacific	979	
		18,823
V. MOORE INTERESTS:		
Rock Island System	8,023	
Delaware, Lackawanna & Western	1,053	
Lehigh Valley	1,433	
		10,509
VI. HARRIMAN INTERESTS:		
Union Pacific System	3,631	
Southern Pacific	10,083	
Oregon Short Line	1,509	
Oregon Railway & Nav. Co.	1,490	
Illinois Central System	6,329	
Central of Georgia	1,916	
Baltimore & Ohio	4,583	
Delaware & Hudson	875	
San Pedro, Los Angeles & Salt Lake	1,099	
		31,515
VII. HILL INTERESTS:	Mileage.	
Great Northern	7,343	
Northern Pacific	6,066	
Chi., Burlington & Quincy	10,443	
Colorado & Southern	1,249	
		25,101
VIII. HAWLEY INTERESTS:		
Minneapolis & St. Louis	1,027	
Iowa Central	558	
Toledo, St. Louis & Western	451	
'Frisco System	6,792	
Chicago & Alton	998	
Chesapeake & Ohio	1,939	
Missouri, Kansas & Texas	3,084	
		14,849
IX. NEW HAVEN INTERESTS:		
New York, New Haven & Hartford	2,873	
Boston & Maine	3,594	
		6,467
X. ATCHISON, TOPEKA & SANTA FÉ		10,141
XI. CHICAGO, MILWAUKEE & ST. PAUL SYSTEM		9,069
XII. SEABOARD AIR LINE		3,015
XIII. PHILADELPHIA & READING		2,171
Grand total of above groups and systems		195,579

The last four railways are not definitely allied to any of the larger railway consolidations, and until some one of the various interests to whom control is attributed becomes predominant they must be regarded as independent systems. Until 1908 the Wisconsin Central was also an independent line, but at that time it became part of the Soo system.

Recent Changes.—The chief changes since the financial panic of 1907–08 in the Vanderbilt system are the addition of the Western Maryland and the Toledo & Ohio Central, and the loss of control over the Delaware, Lackawanna & Western. The leading changes in the Pennsylvania system are the definite control acquired over the Norfolk & Western, and the sale of the holdings in the Baltimore & Ohio and the Chesapeake & Ohio. Morgan influence was extended over the Chicago & Great Western. Gould influence over the Western Maryland was lost, but the construction of the Western Pacific was completed. Moore influence was extended to the Delaware, Lackawanna & Western and Lehigh Valley, but the 'Frisco system was sold. Harriman influence was extended to the Baltimore & Ohio, Delaware & Hudson, and the Central of Georgia. The Colorado and Southern was added to the Hill system. Hawley interests entered the 'Frisco system, Chesapeake & Ohio, and Missouri, Kansas & Texas, but sold their holdings in the Colorado & Southern. In New England the control of the Boston & Maine by the New York, New Haven & Hartford was definitely established in 1910.

Railroad Associations.—Nearly every branch of railroad administration has been organized into associations. The principal society of officials is The American Railway Association, made up of the higher officials from nearly every American railroad. Its present activities are shown by its various committees, chief among which are the executive committee, committee on nominations, on relations with the Interstate Commerce Commission, on transportation, on maintenance, on relations between railroads, on safe transportation of explosives and other dangerous articles, on electrical working, and on car-demurrage rules.

Associations of Officials.—The separate department officials likewise have their associations. Chief among them are the (1) Master Car Builders' Association, (2) American Association of Freight Traffic Officers, (3) American Association of General Passenger and Ticket Agents, (4) American Association of General Baggage Agents, (5) American Association of Railroad Superintendents, (6) American Railway Bridge and Building Association, (7) American Railway Engineering and Maintenance of Way Association, (8) American Railway Master Mechanics' Association, (9) Association of American Railway Accounting Officers, (10) Association of Railway Claim Agents, (11) Association Railway Telegraph Superintendents, (12) Association Transportation and Car Accounting Officers, (13) Society of Railway Financial Officers, and (14) American Association of Demurrage Officers. Some of these department officers, moreover, have associations covering a limited territory. Thus there is a Central and Western Association of Car Service Officers, and similar associations in the east, south, and southeast; a Central Baggage Agents' Association, and corresponding associations in New England and the west; a General Managers' Association of Chicago, of New York, of the Southeast, and of Texas; a General Superintendents' Association of Chicago and of New England; a St. Louis Association of General Passenger Agents; Southeastern Accounting Conference, and various local claim conferences. There are, in addition, various general railway associations, such as the Chicago Railroad Association, Western Railroad Association, and Eastern Railroad Association.

Associations of Employees.—There are numerous associations of railway employees and officials of subdepartments, prominent among which are the American Association of Local Freight Agents, American Association of Passenger Agents, American Association of Dining-Car Superintendents, American Association of Railway Surgeons, American Railroad Employees' and Investors' Association, American Railway Industrial Association, International Association of Ticket Agents, International Master Boiler Makers' Association, International Railway Fuel Association, International Railway General Foremen's Association, National Association of Railway Agents, National Railroad Agents' Association of New England, Railroad Refrigeration Service Association, Railway Association of Special Agents and Police of United States and Canada, Railway Signal Association, Railway Storekeepers' Association, Roadmasters and Maintenance of Way Association of America, and the Train Dispatchers' Association of America.

Car Service Bureaus.—On Oct. 31, 1910, there were forty car service associations or bureaus in the United States and Canada as follows:

(1) Central New York Car Demurrage Bureau.
(2) New York and New Jersey Car Service Associations.
(3) Northeastern Pennsylvania Car Demurrage Bureau.
(4) Philadelphia Car Demurrage Bureau.
(5) Baltimore and Washington Car Demurrage Bureau.
(6) Pittsburg Car Demurrage Bureau.
(7) Western New York Car Demurrage Association.

(8) Cleveland Car Demurrage Bureau.
(9) Columbus Car Demurrage Bureau.
(10) Virginia Demurrage Bureau.
(11) North Carolina Car Service Association.
(12) Southeastern Demurrage Bureau.
(13) Alabama Demurrage and Storage Bureau.
(14) Southern Demurrage and Storage Bureau.
(15) Memphis Demurrage and Storage Bureau.
(16) Nashville Demurrage and Storage Bureau.
(17) East Tennessee Demurrage and Storage Bureau.
(18) Louisville Car Service and Storage Department.
(19) Cincinnati Car Demurrage Bureau.
(20) Toledo Car Demurrage Bureau.
(21) Michigan Car Demurrage Bureau.
(22) Chicago Demurrage Bureau.
(23) Indiana Car Demurrage Bureau.
(24) Illinois and Iowa Demurrage Bureau.
(25) Wisconsin Demurrage Bureau.
(26) Lake Superior Car Service Association.
(27) Missabe Range Car Service Association.
(28) Northern Demurrage Bureau.
(29) Central Demurrage and Storage Bureau.
(30) Missouri Valley Demurrage and Storage Bureau.
(31) Western Demurrage Bureau.
(32) Texas Car Service Association.
(33) Colorado Demurrage Bureau.
(34) Intermountain Demurrage Bureau.
(35) Montana Demurrage Bureau.
(36) Pacific Car Service Bureau.
(37) Pacific Northwest Demurrage Bureau.
(38) Canadian Car Service Bureau (British Columbia Branch.)
(39) Canadian Car Service Bureau (Western Lines.)
(40) Canadian Car Service Bureau (Eastern Lines.)

The bureaus in Trunkline Territory were disbanded on Nov. 1, 1910.

Traffic Associations.—Among the leading railway associations are those in which their traffic men consult each other as to the rates on competitive traffic. At present there are four classes of such freight traffic associations.

The first includes the large organizations covering wide areas. There are twelve of these associations: The New England Freight Association, Trunk Line Association, Middle States Freight Association, Central Freight Association, Associated Railways of Virginia and the Carolinas, Southeastern Freight Association, Southeastern Mississippi Valley Association, Western Trunk Line Committee, Trans-Missouri Freight Bureau, Southwestern Tariff Committee, Transcontinental Freight Bureau, and the Canadian Freight Association.

The second class includes freight associations whose activities are restricted to a small section of territory, such as the Colorado Freight Bureau, Colorado-Utah Freight Bureau, Local Utah Freight Bureau, Illinois Freight Committee, Michigan Freight Committee, Northern Committee, Virginia Freight Traffic Association, Mississippi Valley Freight Association, and the Western Pennsylvania and Eastern Ohio Railway Traffic Association.

The third class includes numerous local freight associations, such as the Buffalo Freight Committee, Chicago Freight Committee, etc.

The fourth class includes bureaus interested in special kinds of traffic, such as the Gulf Foreign Trade Committee, St. Louis Coal Traffic Bureau, and Ohio Coal Traffic Association.

There are also the same four classes of passenger traffic associations. The larger associations include the New England Passenger Association, Passenger Department of the Trunk Line Association, Central Passenger Association, Southeastern Passenger Association, Western Passenger Association, and the Southwestern Passenger Association. The second class of passenger traffic associations include the Colorado Terminal Lines Passenger Association and the Michigan Passenger Association. The third class, or local bureaus, include the Cleveland, Columbus, Toledo, and Pittsburg Passenger committees. Associations of the fourth class are represented by the Niagara Frontier Summer-rate Committee and the Michigan State Interchangeable Mileage Ticket Bureau.

Railway Accidents.—The number of

railway accidents as of June 30, 1907, 1908, and 1909, as reported by the interstate commerce commission, are as follows:

YEAR.	Employees.		Passengers.		Other Persons.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1909........	2,659	75,851	284	10,333	5,811	10,417	8,824	96,601
1908........	3,470	83,367	383	11,692	6,560	10,275	10,313	105,834
1907........	4,534	87,644	610	13,041	6,695	10,331	10,839	111,016

The rapid decline in the number killed and injured during the last few years has been marked, and has been especially rapid in the casualties to employees and passengers. The least improvement has been in the accidents to persons other than employees and passengers, the number of such persons injured being greater in 1909 than in previous years. In 1909, of the 5,911 killed, 4,944 were trespassing; and of the 10,309 injured, 5,759 were trespassing. The remainder were killed or injured at highway crossings or at stations.

The leading causes of accidents to railway employees are falling from locomotives or cars, jumping on or off locomotives or cars, collisions, being struck by locomotives or cars, coupling and uncoupling, derailments, handling tools, machinery, etc., handling supplies, etc., and overhead obstructions. The leading causes of accidents to passengers are collisions, derailment, and jumping on or off cars.

Though the number of casualties is decreasing it is still a problem of vast importance. In 1909 one railway employee in every 576 was killed, and one in every twenty was injured. One trainman in every 205 was killed, and one in every nine was injured. Accidents to passengers, though receiving most public attention, are relatively as well as absolutely of less importance. In 1909 one passenger in every 3,523,606 was killed, and one in every 86,458 was injured.

The Federal Government regulates accidents (1) by the safety-appliance law which deals with train brakes, automatic couplers, grab irons, and other safety devices, and places their supervision in the hands of the Interstate Commerce Commission; (2) the hours of service law, limiting the periods of time which train employees may be permitted or required to remain on duty, and (3) the requirement that accidents be reported to the Interstate Commerce Commission. A large number of state public safety laws are annually enacted. The most common practice of the states is to regulate grade crossings, hours of labor, and installment of safety devices; and some have laws as to the use of liquor by trainmen, tampering with switches, derailment of trains, the age of telegraphers, and the need of a full train crew.

Accounts and Reports. — The accounts of railways engaged in interstate commerce are now kept according to the uniform system of accounting prescribed by the Interstate Commerce Commission. On June 3, 1907, the commission issued orders for a Uniform Classification of Operating Expenses, a Classification of Operating Revenue, Classification of Locomotive Miles, Car Miles, and Train Miles, a Classification of Expenditures for Road and Equipment. On June 1, 1908, it issued a Classification of Expenses and Revenues for Outside Operations. On June 21, 1909, two other classifications were promulgated—the Classification of Expenditures for Additions and Betterments, and the Form of General Balance Sheet Statement. The general structure of the accounting system is now completed. The commission, however, is at present concerning itself with a uniform system of shop accounts, uniform rules for computing average daily compensation of employees, a uniform classification of commodities carried as freight, rules for the assignment of revenues and expenses to states, and more complete statistics of transportation services at terminals and stations.

The uniform system of accounts above mentioned is now in effect as regards the accounts of the various interstate railways, the reports which they make to their stockholders, and the information required by the commission. The board of examiners of the commission as of Dec. 21, 1909, had, moreover, made 112 reports of the general and special examinations made by it. The former are in the nature of a comprehensive examination of the accounts of carriers to see that accounting orders, rules, and principles prescribed by the commission are carried out. The purpose of the special examination is to obtain specific information as to particular questions.

The regular statistical reports on railroads made by the Interstate Commerce Commission are threefold: (1) a *Monthly Bulletin of Earnings and Expenses*, (2) *Annual Report*, and (3) an annual volume of *Statistics of Railways in the United States*.

Recent Uniform Railway Practices.—In 1907, upon suggestion of the Interstate Commerce Commission, a joint committee of carriers and shippers reported a *uniform bill of lading*. Upon revision of the report by informal conference and extensive correspondence, the commission on June 27, 1908, recommended its adoption. Therefore, on Nov. 1, 1909, the lines in Official Classification Territory adopted the uniform straight, order, special, and export bills of lading, and the uniform livestock contract recommended in the report. Lines in other parts of the United States are adopting the uniform bills as rapidly as changes can be accomplished.

On Jan. 27, 1910, the American Railway Association adopted a uniform code of demurrage rules, known as the "National Car Demurrage Rules," and on Nov. 1, 1910, they went into effect quite generally. The code contains nine rules. Number 1 extends its scope to all cars except those loaded with live stock and empty cars at mines, mine sidings, or coke ovens. Number 2 establishes the free time for all loading and unloading, except into vessels for transshipment, at forty-eight hours; and at twenty-four hours for reconsignment or switching, delivery to or forwarding by a connecting line, and for cars held in transit for inspection and grading. Number 3 fixes the method of computing time, and numbers 4, 5, and 6 provide for notice of arrival to consignee within twenty-four hours after arrival of cars and billing at destination, and specify the practice in case of inability to deliver at specially designated places. Number 7 fixes the charge at $1 per car per day. Number 8 exempts payment in case of weather interference, cars needlessly bunched by error of the carrier, demand of charges in excess of published tariffs, delayed or improper notice, or railroad errors and omissions. Rule 9 provides for a uniform average demurrage agreement.

A revised code of per diem rules went into effect during 1910. Of its seventeen clauses number one was most drastically changed, as compared with the previous code of rules. The flat rate of twenty-five cents per car per day as established in 1908 was abolished and varying rates adopted. The charge for the slack season (March, April, May, June, and July) was fixed at thirty cents per car per day; while for the remaining months, or busy season, the charge was placed at thirty-five cents per car per day.

Railroad Freight Rates. — In the winter of 1910 the railroads in many sections of the United States individually, but in some cases through their traffic associations, announced an increase in freight rates and filed revised tariffs with the Interstate Commerce Commission. Action was then begun by the government against the traffic associations on grounds of the Sherman antitrust law, the contention being that the railways virtually made rate agreements in these associations. Thereupon a clause was placed in the Mann-Elkins act of June 18, 1910, empowering the Interstate Commerce Commission to investigate proposed rate increases before they have become effective. The action of the government under the Sherman act was then withdrawn, and the rate increases were suspended subject to a ruling upon their reasonableness by the commission. The commission has for some months been holding hearings, and many railway officials and shippers have presented testimony.

The proposed rate increases relate largely to the rates on classified freight, and primarily to the higher classes. Articles in the lower classes and commodity rates are affected but slightly. The contention of the carriers is that high-class freight, whose intrinsic value is high, can best afford a rate increase, and that such rates can be increased without materially affecting the industries of the country or influencing prices. The main reasons advanced for the proposed increase are: (1) the increase in operating expenses due to increased wages and prices of railway supplies; (2) the present small return on the actual investment of railways and the necessity of increasing this return, or of at least maintaining it; (3) transportation has been exempted from the general increase in prices applicable to other commodities; and (4) the need of making extensive terminal improvements.

The probable ruling of the commission on the proposed general increase is in no way foreshadowed by its recent decisions relative to Missouri River rates and transcontinental rates. These cases involved peculiar systems of freight rates, and not the reasonableness of rates generally. They are two important instances in which the commission ordered a change in the system of rates as well as a reduction of the rates to some points. Neither do the Portland Gateway case and Pullman case foreshadow the attitude of the commission as to the proposed increase in freight rates. The former of these cases involves the method of computing passenger fares to the Pacific Coast, and the latter involves both the general level and method of making Pullman fares. Both cases, moreover, involve particular rates in the passenger as distinct from the freight service; and passenger fares generally were not considered.

The freight-rate hearings now conducted by the commission and the ruling which is to follow will be among the most important decisions ever rendered by that tribunal.

Mann-Elkins Railway Act of June 18, 1910.—On June 18, 1910, the interstate commerce act was amended in many important respects, the main amendments being the following:

(1) A "Commerce Court" was created with jurisdiction over (*a*) the enforcement of orders of the Interstate Commerce Commission except those involving the payment of money; (*b*) cases brought to enjoin or set aside orders of the commission; (*c*) cases of rebating brought under the Elkins law, and (*d*) mandamus proceedings arising under section 20 or 23 of the interstate commerce law. It has the jurisdiction over these cases formerly exercised by circuit courts; and its orders may be appealed to the Supreme Court of the United States.

(2) All the above-named cases brought before the Commerce Court or Supreme Court must be brought by or against the United States, and are in charge of the attorney general of the United States.

(3) The jurisdiction of the Interstate Commerce Commission and the scope of the interstate commerce law are extended to include telegraph, telephone, and cable companies doing an interstate business.

(4) The commission is empowered to fix maximum rates upon its own initiative as well as upon complaint; and likewise to establish classifications. It may also suspend proposed rate increases pending inquiry as to their justice. It may reject tariffs which do not give lawful notice of their effective dates.

(5) The commission is empowered to establish new through routes and joint rates and classifications even though satisfactory through routes already exist, except in case of street railways not regularly carrying freight and shipments wholly by water.

(6) The commission is given specific power to issue orders as regards any "conditions and practices whatsoever" of carriers within the scope of the act.

(7) The long and short haul clause is given real force by striking out the words "under substantially similar circumstances and conditions."

(8) Railroad rates reduced to meet water competition may not be increased unless the commission finds that the "proposed increase rests upon conditions other than the elimination of water competition."

(9) The shipper is given control over the routing of freight subject to the wishes of the commission.

(10) Carriers are required to furnish a statement of rates to shippers upon written request.

(11) The antirebating clause is amended by stating in greater detail the unlawful ways and devices of obtaining rebates.

(12) Carriers are prohibited from disclosing the business secrets of shippers or consignees.

(13) The President is authorized to appoint a special Stock and Bond Commission to investigate and report as to railway capitalization.

(14) The procedure is specified in case an injunction against state statutes by restraining state officers from enforcing them is applied for.

(15) Miscellaneous provisions are those increasing the power of the commission over railroad reports; those outlining the methods of enforcing its orders; those further specifying the persons who may accept free passes; and those requiring each carrier to designate an agent at Washington upon whom notice and process may be made in proceedings before the commission or the Commerce Court.

State Railroad Commissions.—The following table shows the various types of state railroad commissions at present regulating the intrastate business of railways:

Advisory Powers.	Mandatory Powers Over Railroads.	Public Utilities Commissions.	Corporation Commissions.	No Commissions.
Arizona	Alabama	Georgia	North Carolina	Delaware
Connecticut	Arkansas	Maryland	Oklahoma	Idaho
Massachusetts	California	New Jersey	Virginia	New Mexico
Pennsylvania	Colorado	New York		Utah
	Florida	Vermont		West Virginia
	Illinois	Wisconsin		Wyoming
	Indiana			
	Iowa			
	Kansas			
	Kentucky			
	Louisiana			
	Maine			
	Michigan			
	Minnesota			
	Mississippi			
	Missouri			
	Montana			
	Nebraska			
	Nevada			
	New Hampshire			
	North Dakota			
	Ohio			
	Oregon			
	South Carolina			
	South Dakota			
	Tennessee			
	Texas			
	Washington			

Those with advisory powers may merely investigate and advise. Those with mandatory powers over railroads have the power either to prescribe individual rates or to fix a schedule of rates, and to issue mandatory orders as to matters other than rates. Public service commissions are those with jurisdiction not only over railroads, but also over other public utilities. With the exception of the New Jersey Board of Public Utilities Commissioners they exercise the power to prescribe rates. Similar to them are the corporation commissions which exercise mandatory powers over many corporations doing an intrastate business. There are at present but six states and territories without some form of railroad commission.

One of the most important changes in 1908 was the substitution in Vermont of a "public service commission" for the previous railroad commission. Its jurisdiction is extended so as to include gas and electric lighting and heating companies, express, telegraph, telephone, and power companies. The commission has the power to fix rates on its own motion, or on complaint; to issue orders as to manner of operation, quantity and quality of product, standard commercial units of product or service; maintenance of proper systems, plants, conduits, appliances, wires and exchanges and unjust discriminations; and to control the issue of securities.

In 1910 public utilities commissions were also created in Maryland and New Jersey. (See XI, *Public Service Commissions.*)

In 1909 a railway commission was established in Arizona (Ariz., 1909, ch. 15), with jurisdiction over railroads, electric lines, express, sleeping car, and boat line companies. Tariffs are filed with it and it may, upon complaint, or its own motion, investigate all rates and services. It may then request the carrier to change the rate or service in question, if found unreasonable or unfair; and if the carrier refuses to comply the commission is required to make complaint with the Interstate Commerce Commission.

In 1909 the commission law of California was remodeled and a new railroad commission created (Cal., 1909, p. 499), with jurisdiction over railways, express companies, sleeping car companies, water lines, ferries and bridges, all cars irrespective of ownership, and over refrigeration and storage charges. It has mandatory powers over rates, through routes, joint rate, and service in case of proper complaint and investigation.

The railroad commission of Washington (Wash., 1909, ch. 93) was, in 1909, given jurisdiction over telegraph and telephone companies; it was given the power to prescribe uniform accounts, and the duty of making a complete valuation of railway property in Washington. A long and short haul clause is enacted, subject to the discretion of the commission. The entire commission statute of Washington is remodeled and full powers over rates and fares are given to the commission.

The Alabama commission law was, in 1909 (Ala., 1909, p. 97), amended as to appeals from the commission. Such appeals may now be made to the chancery court of Montgomery County, with further appeal from the trial court to the supreme court. During appeal a bond to protect shippers and consignees is required of the carriers. It is also amended so that each charge in excess of the rates prescribed by the commission is regarded as a separate offense (Ala., 1909, p. 39), illegal rebating practices are fully defined (Ala., 1909, p. 210), and the jurisdiction of the commission is extended to navigation companies (Ala., 1909, p. 31).

The Arkansas commission was given full power over car distribution (Ark., 1909, No. 277), except that the carrier is entitled to a reasonable time within which to furnish required equipment, and it was authorized to defend suits brought in the Federal courts and to hire expert counsel (Ark., 1909, No. 8).

A Minnesota statute (Minn., 1909, ch. 195) requires carriers in case of contested rates found lawful by the courts to pay the excess charge to the commission for distribution to shippers or consignees.

The Wisconsin commission (Wis., 1909, ch. 335) was given power to suspend proposed rate changes during an investigation of them; and its power over the issue of stock was further defined (Wis., 1909, ch. 530).

The Nebraska commission was given control over the issue of railroad securities (Neb., 1909, ch. 108), and was given the duty of ascertaining the physical valuation of railroads (Neb., 1909, ch. 107).

In New Jersey the State Board of Assessors was ordered to revalue all railroad and canal property, real and personal, including separately the value of franchises.

State Freight-rate Statutes. — In various states, freight rates have been further regulated by statute as contrasted with regulation through commissions. In 1909 a new rate act was enacted in Kansas (Kan., 1909, ch. 193); schedules of maximum rates are prescribed on car-load lots of live stock, lumber, hay, coal, lime, cement and plaster, brick, wheat, other grain, flax seed, millet seed, salt, stone, and sand. Minimum car-load weights are also prescribed. The railroad commission of Kansas (Kan., 1909, ch. 289), moreover, was ordered to investigate all rates on commodities entering the state through its eastern, southern, and western borders. A statute was likewise enacted in Minnesota (Minn., 1909, ch. 136) fixing maximum rates on sixteen groups of commodities; and accompanying carload weights. In Nebraska (Neb., 1909, ch. 104) maximum rates were fixed on residuum fuel, oil, and crude petroleum; and rebates on these articles were prohibited. In North Carolina (N. C., 1909, p. 1367) the legislature ordered the commission to put the same relative rates to North Carolina ports into effect as are in effect to ports of Virginia and South Carolina. An Oregon statute (Ore., 1909, ch. 97) declares unlawful, all unjust discrimination between localities. In Wisconsin (Wis., 1909, ch. 335) rates under a recent enactment may not be changed without a notice of thirty days, as compared with the previous requirement of ten days.

State Passenger-fare Acts.—In 1909 a two-cent fare act was enacted in South Dakota (S. D., 1909, ch. 6), with the proviso that it does not apply to lines with a maximum grade exceeding seventy-five feet to the mile and an average grade exceeding fifty feet (S. D., 1909, ch. 207). A statute of Michigan (Mich., 1909, No. 288) fixes a maximum of three cents for distances not exceeding five miles in the lower peninsula; and four cents for distances of not over ten miles in the upper peninsula. For greater distances a two-cent fare applies on lines with gross passenger train earnings of $1,200 or more per mile; and a three-cent fare applies on lines with smaller passenger earnings.

The Indiana legislature (Ind., 1909, ch. 18) fixed a two-cent fare for adults and one-cent fare for children of from five to twelve years of age. A Minnesota statute (Minn., 1909, ch. 493) fixes a one-cent fare for the Minnesota national guard and naval militia reserve.

Antipass statutes were enacted in various states. The Maine antipass law (Me., 1909, ch. 72) was extended to Federal, county, and city officials. In New Hampshire (N. H., 1909, ch. 126), and Nebraska (Neb., 1909, ch. 109) general antipass laws were enacted applicable to all except certain specified persons, much as in the Federal antipass statute. Two New Jersey statutes (N. J., 1909, ch. 196; 1910, ch. 100) give a detailed statement of the various public officials who are entitled to free transportation according to the previous law enacted in 1907. In a Florida law (Fla., 1909, No. 26) the list of exceptions to whom passes may be granted is fully stated. The Georgia legislature enacted a law permitting the granting of passes to employees retired on account of age or accident (Ga., 1909, No. 219, p. 163). An Alabama statute (Ala., 1909, p. 26) permits reduced fares and rates for certain purposes, such as excursions, the carriage of government or state freight, the transportation of railway employees, etc. In Wisconsin the law is so amended that free transportation may be given to *bona fide* immigration agents. The legislature of Minnesota made the free transportation of caretakers of live stock compulsory (Minn., 1909, ch. 380); and a similar law applicable to caretakers of live stock and watermelons was enacted in Missouri (Mo., 1909, p. 355).

Miscellaneous State Railroad Laws.—Many additional railway statutes were enacted in the various states, among the most important of which are the following: In Texas a sixteen-hour law for train employees was enacted (Tex., 1909, ch. 101). In Wisconsin (Wis., 1909, ch. 272) carriers may make refunds of erroneous charges to shippers upon order of the commission without being subject to prosecution. In Arizona construction bonds and notes are authorized with a ten-per-cent interest rate; the bonds and notes are not to exceed the capital stock; and a sinking fund is required (Ariz., 1909, ch. 10). In Nebraska a reciprocal demurrage law was enacted as to the time of delivery of cars, the free time granted to shippers and consignees; and the storage charges on package freight in warehouses (Neb., 1909, ch. 103). An Iowa statute (Ia., 1909, ch. 128) requires transportation facilities to be furnished "within reasonable time." In Tennessee (Tenn., 1909, ch. 179) it is unlawful to bribe railroad employees for special favors. A Missouri statute gives construction contractors, laborers, and material men a lien on the railroad's property (Mo., 1909, p. 660); and a Wyoming statute requires a bond from contractors and subcontractors to protect laborers and material men (Wyo., 1909, ch. 124). In Alabama suit may be brought against any agent of a railroad company and process served on such agent is thereby served on the company (Ala., 1909, p. 232). In Nebraska (Neb., 1909, ch. 96) caboose accommodations for live stock shippers are compulsory; and an average speed of eighteen miles per hour for live stock cars is required between feeding stations.

Leading Decisions and Rulings of Interstate Commerce Commission.—

1. R. R. Commission of Nevada *vs.* Southern Pacific Co., *et al.;* 19 I. C. C., Reps., 238–256 (1910).

This is one of two cases in which the commission ordered a reduction of transcontinental rates to intermediate points in Rocky Mountain territory as compared with Pacific Coast points. The commission fixed a schedule of maximum class rates to Reno, Nev., and points east thereof to Winnemucca; and another schedule of maximum class rates to Winnemucca and points east thereof to the Nevada-Utah state line. It also ordered the transcontinental railroads to furnish data as to all commodities shipped into Nevada from eastern territory, with a view of establishing reasonable commodity rates. It is the opinion of the commission that "the time has come when the carriers west of the Rocky Mountains must treat the intermountain country upon a different basis from that which has hitherto obtained."

2. City of Spokane, Wash., *et al., vs.* Northern Pacific Railway Co., *et al.;* 19 I. C. C., Reps. 162 (1910).

After investigating northern transcontinental freight rates the commission (1) declared the rates of the Great Northern and Northern Pacific to Spokane from eastern defined territory unreasonable, and fixed a maximum schedule including class rates and a long list of commodity rates; (2) ordered the establishment of joint through rates where none now exist; (3) ruled that rates from Mississippi River points to Spokane be slightly lower than from Chicago; (4) that the rates to Spokane be extended to all points at which Spokane rates have been maintained in the past; and (5) that the rates fixed by the commission be given a test for three months to ascertain their effect upon railway revenue before the final order is made.

3. Hillsdale Coal & Coke Co. *vs.* P. R. R. Co.; 19 I. C. C., Reps. 356 (1910).

The commission sustained its earlier rulings that the owner of private freight cars is entitled to their use, but that they must be counted against the distributive share of the mine receiving them. It also denied that physical capacity alone is the fair and sound basis for rating coal mines for car distribution. It did not fix a method of rating coal mines but ruled that, whatever method is enforced, no shipper shall fare ratably better than any other shipper.

4. George S. Loftus *vs.* Pullman Co., *et al.;* 18 I. C. C., Reps., 135 (1910).

After extended hearings the commission fixed the sleeping-car rates for upper berths at less than the rates for lower berths between St. Paul and various points, such as Chicago, Superior, Seattle, Fargo, and Grand Forks. It also ordered a reduction in the lower berth rates between St. Paul and Seattle and Fargo. The decision has been enjoined by the courts and rehearings have been called by the commission. The Pullman Company has since granted a difference between upper and lower berth rates, and has reduced lower berth rates between certain points to the satisfaction of the complainant.

5. Receivers' and Shippers' Association of Cincinnati *vs.* Cincinnati, New Orleans & Texas Pacific Railway Co. *et al.;* 18 I. C. C., Reps. 440 (1910).

The commission declared class rates from Cincinnati to Chattanooga unreasonable and fixed a schedule of reasonable maximum rates. It declared also that it is not clearly apparent that rates from the East discriminate unduly against the West. "Neither the East nor the West has any vested right to sell a certain amount in this southern territory. Each section is entitled to a reasonable rate and to do what business it can under that rate."

6. Administrative ruling on long and short haul clause, Oct. 19, 1910.

The commission ruled that there will be no change in the existing status of railroad rates as to the long and short haul clause of the Mann Act of June 21, 1910, until Feb. 17, 1911. On or before that date such carriers as desire to be relieved from the requirements of this clause are ordered to make application before the commission as provided for by law. The commission declared its intention to apply the long and short haul principle "at the earliest possible date in every instance except possible extreme and very unusual cases." The order if strictly enforced may have a widespread effect upon rates in southern and transcontinental territories.

7. In the matter of jurisdiction over water carriers; 15 I. C. C., Reps. 205 (1909).

The commission ruled that carriers of interstate commerce by water are subject to the act to regulate commerce only in respect of traffic transported under a common control, management, or arrangement with a rail carrier, and in respect of traffic not so transported are exempt from its provisions.

Leading Court Decisions.—Among the many important court decisions of the last two years affecting transportation practice, the following deserve special mention:

1. New York Central & Hudson River Railroad Co. *vs.* United States, 212 U. S. 481 (1909).

It was urged that the Elkins Anti-rebating Law is unconstitutional; that Congress cannot prosecute a corporation in a criminal court for wrongful acts of its employees, and that to punish the corporation is to deprive the innocent stockholders of property without due process of law. None of these contentions was sustained by the Supreme Court; and it further held that any acts assumed to be done under authority by its agents are the acts of the corporation.

2. United States *vs.* Standard Oil Company, 170 Fed. 988 (1909).

The Federal District Court (Judge Landis) having found the Standard Oil Company guilty of accepting rebates and having imposed a fine of over $29,000,000, the case was appealed by the company. The Court of Appeals referred it back to the District Court (Judge Anderson) for a new trial. The District Court then found the company not guilty of accepting rebates, the government not having proved the existence of published rates at variance with actual rates and that the alleged published rates were not "posted" as required by law.

3. Philadelphia & Reading Railway Company, *et al.*, *vs.* I. C. C., 174 Fed. 687 (1909).

An order of the commission, reducing rates on coal, was attacked on the ground that it was unreasonable. The United States Circuit Court held that, provided no natural, legal, or constitutional right has been violated, it is not the province of the judiciary to question the reasonableness of an order of the commission. This upholds the contention of the commission that if the formalities of the statute are complied with, proper complaint present, a full hearing had, and the order properly made, then its orders can be attacked only upon constitutional grounds.

4. Southern Pacific Company, *et al.*, *vs.* I. C. C., 177 Fed. 963 (1910).

The United States Circuit Court in this case ruled that action of the Interstate Commerce Commission in fixing rates can be reviewed by the courts only on the constitutional ground that it is confiscatory.

5. I. C. C. *vs.* Illinois Central Railroad, 215 U. S. 452 (1910).

The right of the commission to make rulings as to the distribution of railway fuel cars was questioned. The Supreme Court held that such rulings are within the authority of the commission and that it may order such fuel cars to be included in the total equipment available for distribution.

6. Baltimore & Ohio Railroad Company *vs.* United States *ex rel* Pitcairn Coal Company, 215 U. S. 481 (1910).

In this case the Supreme Court finally upheld the administrative control of the Interstate Commerce Commission over car distribution. It held that the distribution of shippers' cars and railway fuel cars being a matter involving discrimination is within the competency of the commission; and that the courts will not interfere until after action thereon has been taken by the commission.

7. United States *vs.* Delaware &

Hudson Company, 213 U. S. 366 (1909).

In this "commodities clause decision" the Supreme Court so interpreted the commodities clause of the Hepburn Act as to render it powerless. It held that "the ownership by a railway of stock in a *bona fide* corporation manufacturing, mining, producing or owning the commodity carried is not the interest, direct, or indirect, in such commodity forbidden to the carrier by the statute."

8. I. C. C. *vs.* Chicago, Rock Island & Pacific Railway Company, 218 U. S. 88 (1910); and I. C. C. *vs.* Chicago, Burlington & Quincy Company, 218 U. S. 113 (1910).

In these, so-called Missouri River rate cases, the United States Supreme Court refused to enjoin the order of the Interstate Commerce Commission as to rates between the Missouri and Mississippi rivers. It ruled that the commission has the power to fix rates; that it may prevent unjust discriminations between places; that the carriers may complain of orders affecting their revenues, but not those simply affecting shippers or places; and that the courts can review only as to the constitutionality of an order of the commission. (See V, *Law and Jurisprudence; Interstate Commerce.*)

STREET RAILWAYS

Operation.—The most recent complete returns of street railway operation are those made public by the United States census in 1910, as of June 30, 1907. The following condensed table shows the general situation in 1907 as compared with that of 1902:

Item.	1902.	1907.	Per Cent. Increase.
Number of operating and lessor companies	977	1,236	25.2
Length of 1st train track (miles)	16,645.34	25,547.19	53.5
Total length of single track (miles)	22,576.99	34,403.56	52.4
Number of cars	66,784	83,641	25.2
Passenger cars	60,290	70,016	16.1
Other cars	6,494	13,625	109.8
Passengers carried	5,836,615,296	9,533,080,766	63.3
Total car mileage	1,144,430,466	1,617,731,300	41.4
Gross income	$250,504,627	$429,744,254	71.6
Net income	$30,596,977	$40,340,286	31.8
Capital stock (par value)	$1,315,572,960	$2,097,708,856	59.5
Bonds (par value)	$922,709,139	$1,677,063,240	68.9
Total employees	140,769	221,429	57.3

The compilations made by the *Electric Railway Journal* which are subject to fewer restrictions in regard to the class of companies included, and are not comparable with the census figures, showed a total mileage of 40,070 in 1908 and 40,957 in 1909.

Of the total miles of street railway track in operation June 30, 1907, 34,059.69 were operated by electricity, 136.11 by animal power, 61.71 by cable, and 146.05 by steam and gasoline motors. Of the total electric mileage 32,501.71 miles were of the overhead trolley type, 1,209.78 third rail, 322.70 conduit trolley, 22.50 gas-electric motors, and 3.00 storage battery.

As to the character of the track, 27,400.65 miles were owned and 6,922.91 leased; 998.31 miles were operated under trackage rights. Exclusive of the mileage of Connecticut and Massachusetts, 17,467.21 miles were within city limits and 13,286.35 outside; 10,971.84 miles, moreover, were operated on private right of way as compared with 3,801.07 in 1902. This movement to acquire a private right of way has been particularly active during the last two years.

Cars.—Of the total cars in operation 40,352 were of closed and 22,537 open passenger cars; 6,442 combination passenger cars; 567 combination passenger and express, freight, or mail cars; 118 parlor, sleeping, dining, and private; 5,669 express, freight, and mail; 5,011 work and miscellaneous; 1,883 snow plows, and 1,062 sweepers and sprinklers. There were in the aggregate 68,874 motor cars and 14,767 trailers. The equipment also included 117 electric and 192 steam locomotives.

The tendency in 1909 and 1910 was toward a lighter car for city traffic, varying from twenty-eight to thirty-two feet in length, and operated by two strong motors. A tendency has also been for the introduction of pay-as-you-enter cars on urban lines. On interurban lines heavy cars are being introduced, and a growing number of special cars adapted to long distance through traffic.

Freight Business.—There has been a rapid increase in the amount of freight and express matter carried by electric lines, especially in the Central Western, North Atlantic, and Pacific Coast states. The revenue from these sources in 1907 was $6,792,000, as compared with $1,439,000 in 1902. Three leading freight services are being performed: (1) that on rural trolley lines, (2) carload traffic of heavy freight carried by the electric lines as feeders to steam lines, and (3) the express service, or handling of lighter packages and parcels into and out of large cities.

There has been a decided tendency during 1909 and 1910 for electric passenger lines to raise their fares.

Construction.—The rapidity of electric railway construction is seen in the increase in length of single track from 22,576.99 in 1902, to 34,403.56 miles in 1907, or 52.4 per cent, as reported by the Bureau of the Census. The *Electric Railway Journal*, moreover, reported new mileage of 1,258 miles in 1908 and 887 miles in 1909 throughout the United States, Mexico, and Canada.

Interurban Lines.—The construction of interurban lines has been particularly rapid in recent years. They are at present most highly developed in (1) the Central Western States (Ohio, Indiana, southern Michigan, Illinois, eastern Wisconsin, and eastern Missouri); (2) New England; (3) New York, in the Hudson and Mohawk valleys, and around Buffalo; (4) Pennsylvania, in the northeastern and western valley regions, and (5) the Pacific Coast and southern California, and around Portland, Spokane, and Puget Sound. The tendency is to construct them on private rights of way carefully selected with respect to grade and traffic, with substantial roadbeds and equipment, and reduced number of stops. Many operate through trains or cars and render a service rivaling that of steam railroads.

The total new mileage constructed in the United States, Mexico, and Canada and placed in operation in 1909 was 887 miles, as compared with 1,258 miles in 1908, and 1,880 in 1907. The decrease in construction was largely due to the after effects of the financial depression of 1907–08. Much new construction is now under way in each country and the results will show a large increase in 1910. The largest mileage in 1909 was constructed in New York (129.08 miles), Ohio (77.13), Washington (76.83), Michigan (73.32), Indiana (56.83), California (53.15), Canada (54.54), Pennsylvania (47.65), and Illinois (41.85).

INLAND WATERWAYS AND COASTWISE COMMERCE

Coastwise Trade.—Complete statistics of the coastwise trade of the United States are not available, but the general trade condition may be briefly summarized. The U. S. Bureau of Statistics reports that the leading item of tonnage on the Atlantic and Gulf coasts is coal. During the twelve months ending Dec., 1909, 40,766,879 gross tons were shipped from the five leading coal terminals, as compared with 40,507,486 in 1908. Anthracite coal comprised 16,655,391 tons and bituminous coal 24,111,488. The five ports in their respective order of importance were New York, Philadelphia, Baltimore, Newport News, and Norfolk.

A second item in the Atlantic and Gulf Coast Trade is lumber, of which over six million tons are annually shipped, chiefly from Brunswick, Jacksonville, Savannah, Georgetown, Norfolk and Newport News, Bangor, Mobile, and Charleston. The main receiving ports are New York, Philadelphia, Baltimore, Gulfport, and Boston. New York in 1909 received

486,660,896 feet of southern pine, as compared with 310,516,107 feet in 1908. Cotton to the extent of about 800,000 tons is shipped annually from Galveston, Norfolk, Savannah, New Orleans, and Charleston to New York, Boston, Baltimore, and Providence. In 1909 7,754,700 barrels of petroleum were shipped coastwise from Port Arthur and Sabine, Tex., as compared with 5,900,098 in 1908. It was destined chiefly to Marcus Hook, Pa., Gretna, La., Bayonne, N. J., Delaware River stations, Port Tampa, Fla., Philadelphia, Galveston, and Gibson Point, Pa. Fertilizer and phosphate rock are shipped chiefly from Tampa, Fernandina, and Baltimore to Jacksonville, Charleston, Wilmington, N. C., and Norfolk. Over 12,000,000 tons of stone, sand, cement, brick, and lime are shipped between nearly all the leading Atlantic and Gulf ports.

The regular line steamers do an annual package-freight business of about 18,500,000 tons. The complete tonnage for 1909 is not available, but the Census Office in 1906 reported it to be 65,360,900 tons.

The leading items in the coastwise trade of the Pacific Coast are logs and lumber which are shipped in rafts, barges, steam schooners and steamers, and sailing vessels from Puget Sound, Gray's Harbor, Portland, and upper California, chiefly to San Francisco, southern California, and Hawaii. Oil is shipped from southern California chiefly to Point Richmond, the port of Los Angeles, Portland, and Hawaii. Grain is shipped from Portland, Seattle, and Tacoma to San Francisco; and a small amount of coal from Puget Sound. The total tonnage reported by the Census Office in 1906 was 13,301,000 net tons.

Domestic Trade of the Great Lakes.—In 1909, 80,974,605 net tons of merchandise were shipped between the ports of the Great Lakes, as compared with 60,518,024 in 1908, and 83,506,991 in 1907. The after effects of the financial depression reduced the Lake trade to a low point in 1908, but by the end of 1909 it had nearly returned to a normal level. The following table shows the receipts and shipments of the leading classes of commodities:

GREAT LAKES (DOMESTIC TRADE)

(*Year ending December; net tons*)

	RECEIPTS.		SHIPMENTS.	
	1908.	1909.	1908.	1909.
Flour	1,186,781	1,237,331	1,188,831	1,248,891
Grain and flaxseed	3,290,274	3,239,334	3,424,102	3,428,175
Coal	17,360,795	17,239,112	18,871,583	19,268,356
Ore and minerals	29,104,353	47,156,675	29,113,831	47,183,650
Lumber	1,888,454	2,309,102	1,889,484	2,311,530
Unclassed	6,078,688	7,577,213	6,030,193	7,534,003
Total	58,909,345	78,752,767	60,518,024	80,974,605

The largest item by far is iron ore, of which 40,732,677 gross tons were shipped in 1909 from Duluth, Two Harbors, Superior, Escanaba, Ashland, and Marquette, chiefly to Ashtabula, Conneat, Cleveland, Chicago, Buffalo, Lorain, Fairport, Erie, and Toledo; 19,268,356 net tons of coal were shipped. Hard coal moves chiefly from Buffalo, Erie, and Oswego to Superior, Milwaukee, and Chicago; while soft coal chiefly from Toledo, Ashtabula, Cleveland, Lorain, and Sandusky to Milwaukee, Superior, Duluth, Manitowoc, and Chicago; 1,155,767 thousand feet of lumber moved mainly from Duluth, Manistique, and Manistee to Chicago, North Tonawanda, and Buffalo; 54,322,913 bushels of wheat were shipped chiefly from Superior, Duluth, and Chicago to Buffalo, Chicago, Detroit, and Toledo; 28,954,760 bushels of corn chiefly from Chicago and Milwaukee to Buffalo, Ogdensburg, and Ludington; 17,828,717 bushels of oats mainly from Manitowoc, Chicago, Milwaukee, Superior, Duluth, and Gladstone to Buffalo, Ludington, and Frankfort. The Lake trade also included 14,157,662 bushels of barley and smaller quantities of rye and flaxseed; 1,248,891 net tons of flour were shipped chiefly from Milwaukee, Chicago, and Duluth to Buffalo, Erie, and Ludington. Other leading items are pig iron, iron manufactures, salt, coffee, and package freight.

One index of Lake freight movements are the gateways between the lakes. In 1909 57,895,149 net tons of freight passed through the Sault Ste. Marie Canal, as compared with 41,390,557 in 1908, and 62,247,670 net tons passed through the Detroit River, as compared with 46,946,884 tons in the previous year.

The distribution of the total Lake trade of 1909 by lakes is shown in the following table:

	Receipts.	Shipments.
	Net Tons.	Net Tons.
Lake Superior	10,011,754	14,086,365
Lake Michigan	22,113,944	14,123,780
Lake Huron	794,815	1,492,930
Lake Erie	45,310,084	18,704,142
Lake Ontario	522,170	545,995
Total	78,752,767	48,953,212

Commercial Movement on Rivers and Canals. — The following table shows the total traffic passing through the state canals of New York, the Erie, Champlain, Oswego, Cayuga, and Seneca and Black River canals, as reported by the U. S. Bureau of Statistics:

NEW YORK STATE CANALS

	TONNAGE ON NEW YORK STATE CANALS.				All Others.	Total. Quantity.	Total Value.
	Erie.	Champlain.	Oswego.	Cayuga and Seneca.			
1900	2,145,876	972,867	31,742	130,126	65,330	3,345,941	$84,123,772
1906	2,385,491	740,983	172,228	164,874	77,331	3,540,907	66,501,417
1907	2,415,548	678,506	143,277	112,570	58,013	3,407,914	63,903,970
1908	2,177,443	614,762	92,831	81,029	85,812	3,051,877	54,511,509
1909	2,031,307	732,125	121,717	84,957	146,430	3,116,536	59,081,572

The east-bound traffic of the Erie Canal consists mainly of grain, lumber, salt, stone, lime, and clay; and west bound it is mostly general merchandise. North bound the Champlain Canal carries chiefly coal, stone, lime, clay, and ice; and south bound wood pulp, lumber, and iron ore. The traffic of the other New York canals consists mainly of farm produce, lumber, coal, and general merchandise. The tonnage of the Erie Canal has declined from 6,673,370 tons in 1872 to 3,116,536 in 1909, and the total tonnage of all the New York canals at present is less than three per cent of the tonnage moving by rail.

The tidewater coal canals constitute a second group. About 400,000 tons mainly of coal with certain quantities of iron and building materials are annually shipped through the Lehigh Canal and the Delaware division. Slightly over 50,000 tons are shipped through the Schuylkill Canal; about 88,000 through the Morris Canal, nearly 400,000 through the Delaware and Raritan, and the Delaware and Hudson has been abandoned. The traffic of all these canals has been declining within recent years. The Lehigh Canal and the Delaware Division are owned by the Lehigh Coal & Navigation Company; the Schuylkill Canal by the Philadelphia and Reading Railroad; the Morris Canal is leased perpetually to the Lehigh Valley Railroad, and the Delaware and Raritan is leased to the Pennsylvania Railroad for 999 years.

The traffic of the Chesapeake and Delaware Canal was 816,037 tons in 1909, and compares favorably with 654,284 in 1908. The canal in 1909 moved 2,276 steamers, 1,762 barges, 842 other vessels, and forty-three rafts.

State Canals.—The length, depth, and termini of the leading state canals are as follows:

CANAL.	Length.	Depth.	Termini.
	Miles.	Feet.	
Erie	355.1	7	Buffalo & Albany.
Champlain	81.0	5	Troy & Whitehall.
Oswego	38.0	7	Oswego & Syracuse.
Cayuga & Seneca	25.0	7	
Ohio & Erie	326.0	4	Cleveland & Portsmouth.
Miami & Erie	269.0	4–6	Toledo & Cincinnati.
Ill. & Mich	102.0	6	Chicago & LaSalle.
Chi. Sanitary Ship Canal	33.0	22	Chicago & Lockport.
New Basin Canal (La.)	6.7	8	New Orleans.

The leading private canals are:

CANAL.	Length.	Depth.	Termini.
	Miles.	Feet.	
Delaware & Raritan	66.0	8–9	New Brunswick & Bordentown, N. J..
Morris	106.7	5	Philipsburg & Jersey City.
Lehigh	48.0	6	Coalport & Easton, Pa
Delaware Division	60.0	6	Easton & Bristol, Pa
Schuylkill Navigation	90.0	6½	
Chesapeake & Delaware	13.6	10	
Chesapeake & Ohio	185.0	6–7	Cumberland, Md., & Georgetown, D. C.
Dismal Swamp	22.1	9	
Albemarle & Chesapeake	11.0	9	
Fairfield (N. C.)	4.0	6	
Newbern & Beaufort	3.2	5	
Old Basin (La.)	2.5	7	
Barataria & Lafourche (La.)	7.0	6	
Harvey's (La.)	5.35	6	
La Borgue (La.)	7.0	7	
Willamette Falls (Oregon)	.6	6	

Federal Canals.—The leading United States Government canals in operation are the Hennepin Canal (Illinois), St. Mary's Falls Canal, St. Clair Flats Canal, Port Arthur Canal (Texas), Morgan Ship Canal (Texas), Galveston and Brozos Canal (Texas), and the various river canals around falls or shoals in the Ohio, Columbia, Tennessee, Cumberland, Mississippi, Monongahela, and other rivers.

River Traffic.—The complete traffic statistics of the Allegheny River are not available, but in 1909 the usual quantity of coal, gravel, sand, lumber, timber, and stone were shipped. The traffic of the Ohio River proper consists mainly of coal, but in other respects is various. On the upper Ohio, from Pittsburg to Cincinnati, the traffic consists mainly of coal, logs, sand, gravel, and package freight; on the middle Ohio, from Cincinnati to Evansville, coal, lumber and timber, grain, tobacco, and other farm products, and on the lower Ohio coal, corn, wheat, groceries, live stock, flour, and tobacco. Omitting duplications the total traffic of the Ohio River and its tributaries is about 20,000,000 tons annually; and that of the Ohio River proper about 11,500,000.

The annual tonnage moved on the Columbia River is about 3,500,000 tons, consisting chiefly of grain, flour, lumber, farm produce, logs, machinery, and general merchandise. The Hudson River moves annually about 8,600,000 tons chiefly of building materials, coal, wood, grain, lumber, ice, farm produce, manufactures, and general merchandise.

The total traffic on the Delaware River in 1906 aggregated 20,577,000 tons. The leading shipments are coal, sand, petroleum, stone, oysters, and fish fertilizers, chemicals, and iron products; the leading receipts are sand, coal, lumber, petroleum, produce and fruit, chemicals, sugar, grain, railroad ties, and fertilizers.

The leading item in the traffic of the Mississippi River is the coal coming from the Ohio River. This traffic in 1908 amounted to about 11,300,000 tons. Aside from this Ohio River coal traffic the total down-stream traffic between St. Louis and New Orleans aggregated about 400,000 tons, and the up-stream traffic 300,000 tons. The total river tonnage of St. Louis in 1908 was 365,920 tons. The total traffic of the Mississippi River system, excluding the Ohio, was in 1906 reported as 4,304,288 tons. This compares unfavorably with 12,492,555 tons reported in 1889. Aside from coal the leading commodities moved on the Mississippi River are logs, lumber, grain, building materials, iron and steel products, groceries and provisions, cotton, cotton seed, and general merchandise.

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RAILWAYS OF THE WORLD

The *Archiv für Eisenbahnwesen* publishes the statistics of the railways of the world, bringing them down to the end of 1908, or the nearest date of official reports, which for the United States and Canada is June 30 of that year. The data given show the mileage for each country for each of the five years ending with 1908, the increase for the last four years, and the proportion of railway mileage to area and population. The grand total for the world is 611,478 miles, which is an increase of 61,505 miles, or 11.2 per cent., since 1904, and of 16,445 miles, or 2.8 per cent., over 1907, which seems moderate progress when we remember that 13,000 miles have been built in the United States in a single year. But it is fully up to the progress of recent years. Of the increase of 61,505 miles since 1904 considerably more than one half was in America, 33,690 miles, and of this total 27,115 miles were in North America. The mileage at the end of 1908 (the United States and Canada to June 30th) was as follows:

CONTINENTS.	Miles.	CONTINENTS.	Miles.
Europe	202,109	North America	274,372
Asia	58,813	South America	39,013
Africa	19,211	Australasia	17,960
Old World	280,133	New World	331,345

North America nearly equals in mileage the whole of the Old World. In the division between North and South America, the West Indies, which together have 3,340 miles, are counted with South America. At the end of 1908 China had very nearly as many miles of railway as Japan (4,988 miles, against 5,035). More than half of the Asiatic mileage is still in India, where additions are made on a moderate scale, but without interruption. In Europe perhaps the most notable change in 1908 is the very small amount built in Russia, only 285 miles. Russia has still 102 miles less than Germany. Of the new countries of the world Australia is most backward in railway construction. Since 1907 Brazil has increased its railroad mileage 1,224 miles and Argentina 1,800 miles; Cuba has increased its mileage 573 miles. Of the 4,102 miles opened in South America since 1907, 3,597 miles were in these three countries, Cuba being classified with South American countries.

XXII. MATHEMATICS AND ASTRONOMY

MATHEMATICS

E. B. Wilson

As one of the oldest sciences, clearly somewhat necessary for practical life, and considered valuable for mental discipline, mathematics, in its canonical elementary subdivision of arithmetic, algebra, and geometry, has long been taught in essentially unchanged form to school children, and in the colleges a certain amount of analytical geometry and of calculus has been offered in nearly as unchanging form to a few students. In sharp contrast to this fixity of content and generality of distribution of elementary mathematics stands the rapidly increasing domain of higher mathematics to which special periodicals aggregating thousands of pages per annum are devoted, but which is practically unknown and unknowable except to mathematical specialists; indeed even a professional mathematician finds it difficult to read, to say nothing of appreciating, researches in fields remote from those in which he has concentrated his own studies.

The International Congresses.—It may have been this growing isolation of mathematics as a whole and of the individual mathematician in his science which led to the organization of quadrennial international congresses of mathematicians, meeting for the purpose of interchanging ideas with others in the same or in related fields. The last congress, which met at Rome in 1908, through its designation of Profs. F. Klein (Göttingen), H. Fehr (Geneva), and Sir G. Greenhill (London) to organize and supervise an international commission on the teaching of mathematics, took a step which ultimately may aid materially in modernizing and improving instruction in elementary and collegiate mathematics. There will probably result an even stronger tendency than at present to introduce the fundamental conceptions and methods of differential and integral calculus earlier than is now common. The commissioners for the United States are Profs. D. E. Smith (Columbia), W. F. Osgood (Harvard), and J. W. A. Young (Chicago). Under their direction a large number of associates are preparing reports on various topics, such as: general elementary schools, normal schools, mathematical work in American possessions, colleges, technical schools of collegiate grade, universities, etc.

Striking New Work.—Some few years ago the late H. Minkowski (Göttingen), building a mathematical theory upon the researches of H. Lorentz and A. Einstein on electromagnetic theory, set forth and developed the idea that the material universe should be regarded as four dimensional by adding time as a fourth dimension to the usual three dimensions of space. This theory was immediately taken up by many students of mathematics and physics, and the past year has seen the publication of a large number of contributions to the theory. At the present rate of progress it will not be long before the mathematical and physical significance of Minkowski's work, which was unfortunately interrupted by his early death, will be pretty thoroughly understood.

A very noteworthy contribution to American mathematics is the monograph *Introduction to a Form of General Analysis*, by Prof. E. H. Moore (Chicago), in the volume called *The New Haven Mathematical Colloquium*, published by the Yale University Press (1910). The great breadth of view of the author in this work is well shown by his own statement: the existence of analogies between central features of various theories implies the existence of a general theory which underlies the particular theories and unifies them with respect to those central features. The great generality and abstractness of the problem and the use of the symbolism of mathematical logic to give brevity to the formulas and statements will probably make the investigation hard reading, and may therefore hinder its passage into current mathematical doctrine, but the monograph bears the earmarks of a great work, and one is tempted to look back forty years to Benjamin Peirce's monograph on *Linear Associative Algebra* to find a sufficiently important single American contribution to *pure* mathematics with which to rank it.

Bibliography.—The Carnegie Institution has published (1909) the elaborate and valuable work of Prof. D. H. Lehmer (California) on a *Factor Table for the First Ten Millions.* The work is an important event in the science of higher arithmetic. Among important advanced texts may be mentioned: *A Treatise on the Differential Geometry of Curves and Surfaces* (Ginn & Co., 1909), by Prof. L. P. Eisenhart (Princeton); *Theory of Elliptic Functions,* vol. i (Wiley & Sons, 1910), by Prof. H. Hancock (Cincinnati), *Non-Euclidean Geometry* (Oxford Press, 1909), by Prof. J. L. Coolidge (Harvard); *Principles and Methods of Geometrical Optics* (Macmillan Co., 1910), by Prof. J. P. C. Southall (Alabama Polytechnic), and a German translation of the *Introduction to Higher Algebra* (Macmillan Co., 1907), by M. Bôcher (Harvard). In France two noteworthy treatises have appeared: *Les Systèmes d'Equations aux Dérivées partielles* (Gauthier-Villars, 1910), by C. Riquier, and *Leçons sur le Calcul des Variations,* vol. i (A. Hermann et Fils, 1910), by J. Hadamard.

University Instructors.—The retirement of Prof. O. Bolza from the University of Chicago and his return to Germany, his native land, have deprived the university and this country of an eminent mathematician, especially known for his exhaustive treatise on the *Calculus of Variations,* printed in German by B. G. Teubner. The university has reinforced its department by calling Prof. E. J. Wilczynski from the University of Illinois, and thereby maintains, under the leadership of Prof. E. H. Moore, its exceptionally able and active faculty of mathematics. Another loss is in the return of Prof. J. H. Jeans (Princeton) to England. Profs. J. H. Van Amringe, head of the department at Columbia University, and L. A. Wait, head of the department at Cornell, have retired; Profs. J. Stringham, head of the department at the University of California, E. A. Bowser (Rutgers), H. B. Newson (Kansas), and J. E. Wright (Bryn Mawr) have died.

ASTRONOMY

Mabel Loomis Todd

General Survey.—Especially noteworthy was the year 1910 in astronomical annals; true to prediction Halley's famous comet returned, and Mars came to opposition in Sept. of the year before, discussion of this puzzling planet's appearance and possibilities extending through many months. But besides that, work of exceptional interest and importance has been prosecuted at the Harvard, Yerkes, Lick, Mount Wilson, and other observatories, and at similar institutions throughout the world; publications both popular and technical have been issued; many well-known astronomers have died. Three attained world-wide eminence, Sir William Huggins, of London; Schiaparelli, of Milan; and Newcomb, of Washington. In France, Fraissinet, Bouquet de la Grye, and Charlois, discoverer of a hundred planets; in Denmark, Thiele; in Austria, von Gothard; in Australia, Sir Charles Todd; in Ireland, Gore; in Mexico, Valle; in India, Molesworth, keen-eyed observer of planetary surfaces; in America, Hough and Pritchett, both specialists on Jupiter.

Prizes.—Of great prizes, the Copley medal of the Royal Society was awarded to Hill, Nestor of American mathematicians; the Astronomische Gesellschaft prize and the Janssen medal to Cowell and Crommelin for their orbit of Halley's comet; and the gold medal of the Royal Astronomical Society to Küstner, the first German to receive it in ten years, the masterly address of presentation being made by Sir David Gill, president of the society. The Lalande prize of the Paris Academy fell to Borrelly, of Marseilles, and the Valz prize to De la Baume-Pluvinel.

Publications.—There is yet no specific clearing house for astronomical research and its publication. Each of the great nations has its periodicals, technical and popular; but researches of exceptional merit are scattered, often buried, in the reports, proceedings, and transactions of learned societies published in divers tongues. In America *The Astronomical Journal* (Albany) represents the old astronomy, *The Astrophysical Journal* (Chicago), the new, while *Popular Astronomy* (Northfield, Minn.) serves the interests of an ever-widening circle. Astronomical news and discoveries are disseminated in America through the central bureau of the Harvard Observatory, which coöperates with the European station at Kiel, Germany.

The eleventh annual meeting of the Astronomical and Astrophysical Society of America was held at Harvard College Observatory in Aug. Prof. Edward C. Pickering was reelected president, and C. L. Doolittle, treasurer. Many foreign astronomers of distinction honored the society by their presence. Nearly thirty new members were elected. The Blue Hill and Wellesley observatories entertained the society. The wide range of modern research is indicated by a few of the titles of more than forty papers presented: Metcalf on his new 16-inch doublet; Dugan on the variable R T Persei; Frost on new spectroscopic binaries; Dyson on mechanical solution of spherical triangles; Russell on stellar evolution; Mitchell on eclipse wave-lengths; Curtis on Lick Observatory photographs of Halley's comet; Newall on the solar spectrum; Eichelberger on the large transit circle of the Naval Observatory, and Very on solar radiation. The society expressed its approval of the efforts of Pres. Taft to place the Naval Observatory under a civilian head, and voted to accept the invitation of Chief Astronomer King to hold the next meeting in Ottawa in the summer of 1911.

The Astronomische Gesellschaft of Germany held its twenty-third meeting this year in mid-Sept. at Breslau, von Seeliger, president. The membership is now 400. A wreath was placed on the grave of Galle, in the name and on behalf of the society. A comprehensive ten-volume catalogue of variable stars is in progress. Systematic estimation of parallaxes, the orbits of the asteroids, and cometary cosmogony were among the more important subjects discussed. Nineteen comets have now been seen at two or more returns. The society next meets in Hamburg in 1913.

South America.—At the scientific congress in July in Buenos Aires, four South American observatories were represented, and a project discussed for a syndicate ephemeris adapted to their needs. Photographs of Halley's comet and plans for the new national observatory of Chile were presented.

Mount Wilson Conference. — The fourth conference of the International Union for Coöperation in Solar Research was held at Mount Wilson, Cal., Aug. 29 to Sept. 3, 1910. Thirteen countries and fifty solar observatories and laboratories were represented by about seventy delegates. The committee on wave-lengths presented for adoption a table of standard wave-lengths mostly in the iron arc spectrum. Recent research places the value of the solar constant of radiation at less than two calories per square centimeter per minute, with fair indications of variability in this "constant," also of a periodicity with that of sun-spot frequency. Six observers are now coöperating in sun-spot spectra, which are as constant as the Fraunhofer spectrum itself. Much attention was given to eclipse programs, especially the "flash spectrum," and that of the chromosphere. Pickering offered Harvard's station at Arequipa, Peru, for research in solar radiation. A large committee was appointed to deal with the broad question of classifying stellar spectra; the calcium flocculi will continue to be photographed daily; the observatories at Madrid and Mexico are added to those already coöperating, and Japan is invited to join in establishing a solar observatory. Also it was recommended that the fund raised in Italy as a memorial to Father Secchi be devoted to the construction of a tower telescope, a unique instrument of Hale's devising. The union has been very effective in systematizing solar research, and the American organizations represented are the Astronomical and Astrophysical Society, the Physical Society, and the National Academy of Sciences. The union will meet at Bonn in 1913.

Comets.—In late Jan., 1910, while awaiting the slow development of the eagerly anticipated Halley's comet, a strange and wholly unheralded body suddenly appeared. First seen at Johannesburg, it soon became visible in full daylight, with a double tail about 30° long, spreading broadly, curving to a brush-shaped extremity, and concave to the direction of motion. Its spectrum was very bright in the yellow (sodium) region, with three hydrocarbon bands; and there was a progressive spectral development. As the sodium lines faded, the hydrocarbon bands became intensified, and later the cyanogen bands developed. This comet soon faded from sight. The tail, Wright suggests, may have been due to sodium vapor rendered fluorescent by intense sunlight. Other comets—rediscovered this year—are those of D'Arrest, Brooks (1889 v.), Faye; Winnecke, very faint, without nucleus and tailless; also a new comet discovered by Metcalf with a 7½ inch telescope of his own construction. E. Thomson considers the nature of comets in relation to the sun, and the possibility that such bodies may be replenished in the depths of space.

Halley's Comet.—But most important is Halley's comet, famous because it was the one first proved to travel in an elliptic path round the sun. Its period averages about seventy-six years. Its return in 1910 aroused intense popular interest because of its near approach to the earth. Halley himself observed the comet in 1682, and twenty years later, by calculating its orbit, identified it with comets seen in 1607, 1531, and 1456. Cowell and Crommelin, the most recent calculators of its orbit, have established many previous returns, even to B.C. 240. At aphelion, Halley's comet recedes far beyond the distance of Neptune; its perihelion lies between Mercury and Venus. While still beyond the power of telescopic detection, it was first captured by photography at Helwan, Egypt, Aug. 24, 1909. Burnham first caught sight of it with the Yerkes telescope, Sept. 16th; and for weeks it was a mere fuzzy bit of luminous fog, increasing slowly and irregularly in brightness, and developing a brief tail. Archenhold saw the head traverse a star without changing its color or dimming its brightness.

In the late spring of 1910 it became visible to the naked eye. Between half-past two in the morning and dawn it was a beautiful spectacle in the eastern sky. The tail grew in length and impressiveness as perihelion was approached, April 19th. Halley passed within half a million miles of Venus on May 2d, and an observed irregularity of tail structure was perhaps occasioned thereby. W. H. Pickering and others predicted a display of meteors May 5th–6th, and Todd made a balloon ascent to watch for them; but none were visible. Mascart and Müller ascended the peak of Teneriffe, and Ellerman conducted an expedition to Hawaii to observe the comet. Both secured excellent results. May 13th the tail was 45° long. The nucleus varied greatly in size and brightness. Wendell and many others followed these fluctuations, and Stebbins employed a selenium photometer, at maximum, May 11th, when it was much brighter than a standard first magnitude star ($0.^{m}6$). Wolf and others measured the tail and found it nearly 30,000,000 miles long. As seen in the telescope the nucleus was at one time duplex, and at another it showed five or six separate condensations. But most of the time it was round, very brilliant and stellar, and encircled by a coma with two jets or aigrettes. Hundreds of photographs were secured at Helwan, Kodaikanal, Johannesburg, and at many American observatories. They show the nucleus surrounded by a parabolic envelope, from which fan-shaped streamers radiate.

As in 1835–36, the comet exhibited many freaks of figure; often the streamers were bent and much disturbed, one actually crossing the others, and suggesting energetic disruptive action, not a steady flow. On the whole it was a complicated structure of fine waves and filaments, the side streamers showing kinks and irregularities much like the wizard Morehouse comet (1908 iv.). Nordmann found the nucleus to shine almost wholly by reflected sunlight. Barnard, Lowell, and Solá from measures of photographs have derived the velocities of matter seemingly ejected from the head, with a pronounced acceleration of fourteen to thirty miles per second of the gaseous molecules receding along the tail. The spectrum, practically identical with that of Daniel's comet (1907 iv.), contained sodium lines, hydrocarbon bands, and the third cyanogen band. The path of Halley's comet is inclined 17° to the ecliptic, so that on May 19th, the sun, comet, and earth were in a straight line. At the middle of May, just before the transit of the comet across the sun's disk, its tail grew to the enormous length of 140°, as the earth approached. Then there was a bifurcation of the tail which many astronomers observed. There is little or no evidence that the earth ever went through the tail, although it probably grazed one portion of it on May 19th. More likely the earth actually passed between the forks of the duplex tail for two days, as Frost thinks, and as confirmed by observations at Amherst. This accounts for the unexpected retardation of the passage, and the tails seen both east and west. Neither visual nor photographic observations in India revealed any trace of the comet on the sun's disk, so that the composition of the head is certainly such as to allow free passage of light through it. Magnetic and electric disturbances were very slight. On one photograph of Barnard's, June 6th, Halley had discarded its tail, which was drifting away; and a new one had formed at a slightly different angle. After July the comet melted rapidly out of sight, but was seen by Barnard with the Yerkes telescope in Nov. On account of much cloudy weather during the fortnight of the comet's greatest brightness many observations were lost, and popular disappointment was great. To astronomers, however, the photographs arriving from foreign observatories show that a splendid harvest was reaped, and in Barnard's estimate Halley "far exceeded all expectations as a spectacular display." It reaches aphelion about the middle of the century, and returns again in 1986.

Mars.—What Halley's comet was to 1910, that was Mars to the year before, because the planet again came into neighborly proximity of 36,000,000 miles. The observation, even the announced discovery of new canals, goes on with each biennial opposition. Lowell has named and charted many hundreds of them, covering the planet with a geometric tangle. A few may be seen on some of the little Flagstaff photographs of Mars, though with difficulty. Photographs by Hale with a larger and more powerful instrument at Mount Wilson fail to show even a trace of canals. Antoniadi, discussing the latest photographs of Mars, finds the visibility of the dark band seen to encircle the polar cap is only subjective. As a cumulative result of all his years of close scrutiny of Mars, Lowell announced at the opposition of 1909 his unique discovery of two canals never before seen, but then unmistakable, and "therefore new to Mars." This discovery fits in excellently with the Lowellian theory of artificially produced, ice-water irrigated, vegetation-verdured canals, and it awaits verification at the opposition of 1911. Meanwhile, a conservative astronomer here and there still doubts the actual existence of canals. But the belief in real, not illusory markings of some sort, has gradually grown, even among unbelievers. Krebs traces the canals to volcanic action, like the network of seismic and volcanic tectonic lines of the earth's crust. Schiaparelli's epoch-making discoveries have been verified in every particular: "Wherever the distinguished Italian astronomer had drawn a streak," says Antoniadi, a Martian observer of great experience, "there was a group of irregular shadings on the surface of Mars." The opposition of 1909 was memorable not only for yellowness of the planet and faintness of its markings, but also for a controversy on the occult question of water-vapor in the planet's atmosphere. The Lowell Observatory spectrograms as measured and discussed by Very yield rather reluctant evidence of aqueous vapor; on the other hand, Campbell, from the superior elevation of Mount Whitney, Cal., finds no indication of water vapor in the Martian atmosphere. While there is the best of evidence of a thin atmosphere engirdling Mars, there remains much reason to doubt whether it is heavily charged with water vapor; and the question must remain open until a better method than the spectrographic is devised for settling it. As for the "geometric network," and its alleged artificial origin, Antoniadi, who inclines to be judicial rather than partisan, concludes from his study of the 1909 apparition that the true appearance of the arean surface is comparable with that of earth and moon—natural, that is, with no trace of geometric network. Dusky spots of very irregular outline and intensity cover the main body of the planet, and sporadic groupments of them are accountable for the supposed canal system, which is so differently seen and drawn by different observers. On two occasions, with our own atmosphere very steady, Antoniadi witnessed the true structure of the Martian deserts—"a wonderful sight for a dozen seconds. The soil of the planet appeared as if covered with a vast number of dark knots and checkered fields, diversified with the faintest imaginable dusky areas, and marbled with irregular undulating filaments, the representation of which was evidently beyond the powers of any artist. There was nothing geometrical in all this—nothing artificial, the whole appearance having something overwhelmingly natural about it." Unnecessary to say that attention is already focused on coming oppositions, especially the very favorable one of 1924.

The Sun.—The Solar Observatory on Mount Wilson, generously equipped by the Carnegie Institution, is justifying the predictions of its founders by significant contributions to the physics of the sun. Although six years of progress are behind it, still research and construction are going on together, not only on the mountain, but at the physical laboratory in Pasadena. Hale's discovery of the Zeeman effect in the sun has been extended to interpretation of the nature of sun spots, found to exhibit vertical motion; and to critical investigation of the sun's electro-magnetic properties, as yet obscure. The model tower telescope is being replaced by one still larger, 150 feet in vertical length, giving a solar image seventeen inches diameter, so that small parts of the disk can be spectrographed with confidence. No less important is the five-foot reflector, completed by Ritchey, which is perfect and complete not only as a visual and spectroscopic instrument, but has been signally successful in photographing faint nebulæ in which it reveals hitherto unsuspected wealth of cloud-like filaments. But even this superb instrument will soon be surpassed by the eight-foot Hooker telescope, whose construction is well advanced. Hale has a large corps of able assistants, who make all the phenomena of the sun a matter of close record, and are extending the scope of their research to the distant suns of outer space.

Hough, his majesty's astronomer at Cape Town, applies Doppler's principle in ascertaining the sun's distance by means of the spectroscope. This novel method, wholly independent of all others, affords a result in good agreement with the best previous values—viz., sun's parallax 8″.800, and its distance very close to 93,000,000 miles. Perrine's discussion of his photographs of Eros (433) taken with the Crossley reflector of the Lick Observatory gives 8″.8067 for this fundamental constant.

The Astrophysical Observatory of the Smithsonian Institution, founded by the late Prof. Langley, continues in charge of Abbot. Its research work has a broad bearing on the relation of the sun to climate and life upon the earth. Langley expressed the hope that careful study of the sun's radiant energy might eventually lead to the discovery of means of forecasting climatic conditions perhaps for years in the future. Abbot and Fowle have conducted careful measures of solar radiation through several years, which indicate variations in its intensity from time to time, sufficient to affect the earth's temperature appreciably. Apparently the observed changes in solar radiation are connected with a varying transparency of the sun's enveloping atmosphere, and Abbot surmises that they may be caused by it.

On the other hand, Kimball traces apparent variations in the solar radiation not so clearly to the sun itself as to marked changes in atmospheric transmissibility at the earth. Pronounced diminution in this property of the air occurred in 1884–86, and in 1903–04, undoubtedly connected with violent volcanic eruptions, causing a lessening of temperatures and temperature-amplitude. Kimball adds a full bibliography of solar radiation.

Recent advances in radioactivity may modify greatly our theories of maintenance of the solar heat. It is by no means certain that the sun's contraction upon itself is the only method by which its vast output of heat is kept up. Helium has long been recognized in the sun, and it is produced by the breaking up of radium, with immense liberation of heat in the process. In this way at least it is possible that the sun's supply of heat may be wholly or in part maintained from age to age.

Hansky and Chevalier have taken photographs of the sun's surface so highly magnified that the individual granules are shown; and by means of photographs at very short intervals, they have found it practicable to recognize the motion of individual granules, which apparently are traveling at random with velocities of five to twenty miles per second.

Sun Spots.—The sun's spot activity has been descending in its cycle through 1909–10. Dr. Lockyer and Deslandres discuss spectroheliograms showing that the enormous magnetic disturbance of Sept. 25, 1909, was heralded by an abnormal outbreak from the sun spot of that date, the terrestrial disturbance lagging about thirty hours after the solar. Riccò gives a comprehensive résumé of solar physics during recent years, especially eclipse and spectroheliographic work. Elaborate solar and stellar programs have been organized by Sir Norman Lockyer and his son for the Solar Physics Observatory, South Kensington, in coöperation with Cape Town, Poona, Dehra Dûn, Kodaikanal, and Mount Wilson. Few days escape a photographic record, with this chain of observatories engirdling the world. McClean, who was successful with the eclipse of 1908 at Flint Island, at Tasmania in 1910 met with gales, rain, and thunder. Preparations for 1911 are under way; the eclipse being visible for about four minutes in the Samoa Islands.

Venus.—LeVerrier's supposed intramercurian planets have now been pursued so persistently by photography, though without finding them, that Campbell proposes definite abandonment of further search. The latest observations of Mercury appear to corroborate Schiaparelli's deduction as to rotation, that the planet turns once on its axis while going once round the sun. It looks much as if Venus maintains a like respectful relation to the central ruler, with her same cheek always sunward. Still, the question is by no means settled. Accordingly, See and Henkel conclude that Venus is quite certainly inhabited, while Lowell is even more positive that it is not. Clayden discusses the clouds of Venus, and a stellar occultation by the planet gives the depth of its atmosphere as sixty miles.

Milne's delicate seismic recorders prove the elasticity of the earth's crust, and Love investigates the yielding of the earth to disturbing forces, revising Lord Kelvin's hypothesis that the earth is absolutely incompressible and of uniform density and rigidity. Larmor discusses the relation of the earth's free precessional nutation to its resistance against tidal deformation, and Hayford publishes an investigation of its figure and isostasy.

Asteroids.—Metcalf, by an ingenious method of his own, has discovered many asteroids, and he appeals to American astronomers to calculate the orbits of these bodies, lest they become lost. Pickering suggests frequent photographic observations of Eros, as its light varies according to some law yet unknown.

Other Planets.—Spectroscopy of the atmospheres of the outer planets, Jupiter, Saturn, Uranus, and Neptune has been advanced by Slipher, with specially sensitized plates which have enabled the discovery of new absorption bands beyond the red. There is a slight presumption that Jupiter shines in small part by inherent light, as Draper long ago indicated. Particular attention has been devoted to planetary photography, with noteworthy gains in the amount of self-recorded detail; especially in Barnard's photographs of Jupiter with the forty-inch Yerkes telescope. They show the belts in about the same position as the spot zones on the sun, and stand enlarging to diameters of two inches and more. Barnard, Fox, and others, observing with the five-foot reflector at Mount Wilson, discovered on Saturn's south pole a cap similar to that on Mars, only blue instead of white. Jupiter has now eight known satellites, and Saturn ten. Gaillot succeeding LeVerrier, has greatly improved the tables of motion of the three outer planets. Many fine planetary drawings have been made by Phillips and others.

The problem of a trans-Neptunian planet, investigated by Todd in 1877 and Forbes in 1880, has been reopened by W. H. Pickering, Lau, and Gaillot, with resulting positions that do not agree very well. Metcalf, and others, have made photographic search for such a body, but without success. On See's new theory of planetary origin, there should be several trans-Neptunian planets.

Star Streams. — By collating the thousands of proper motions now known, Kapteyn has put forward the surprising theory that the stars may be distributed into two great streams about equal in numbers, moving through one another and completely interpenetrating; with different velocities, and in diverging directions inclined about 110° to one another; one with an average velocity of twenty-six, and the other of forty kilometers per second. The line of relative motion of the two streams is that of the plane of the galaxy. The first stream includes Scorpio and Centaurus, while the second embraces a vast area of the sky around Perseus. Dyson confirms the existence of the Kapteyn streams, and Eddington says, "The new theory may indeed divide the universe in two, but it unites the individual stars in a way hardly dreamed of hitherto." On the other hand, L. Boss concludes that in general the stars are traveling through space at random, and not in dual streams as European research appears to indicate.

The Stars. — Boss's *Preliminary General Catalogue*, a publication of great utility, is the outcome of critical discussion of all available observations, and exhibits high accuracy in the positions of 6,188 stars, including all those visible to the naked eye. The Carnegie Institution has undertaken a more comprehensive catalogue, to include about 25,000 stars. Additional heavy tasks in meridian observation are already under way at the annex of the institution, in San Luis, Arg., where supplementary observations of the southern stars are in progress. B. Boss has made a detailed comparison of the catalogue with that of Auwers. Skinner is engaged on the proper motions of nearly 9,000 stars observed by him.

Stellar parallaxes and distances have been continued at Yale by Elkin and Chase, and at several European observatories. Kapteyn has collated all determinations of star parallax into a systematic whole. Several *novæ* have been found on the Cambridge plates, and observations of variable stars form part of the regular program at Harvard, Amherst, Mount Holyoke, and many other observatories. Aitken has completed a survey of the visual doubles, and double star observations and orbits are continued by Burnham, Doberck, Doolittle, and Olivier. So accurate have the measures of radial velocities become, that Campbell, Frost, Wright, and Albrecht have succeeded in finding many stars with varying motion in the line of sight.

Nordlund has completed an elaborate investigation of the stellar cluster Messier thirty-seven, and Russell correlates spectral type and parallax. One variable in the cluster Messier five (Libra) has an apparently unchanging period for the past ten years, and Barnard suggests its use as a time standard to check the earth's motion. Bergstrand finds the colors of the stars very important in astrometry, and that the coefficient of refraction should be modified according to effective wave length. Salet and Nordmann have undertaken further observations of temperatures (photometrically) of stars of various spectral types. There is reason for the hope that Gramont's "ultimate lines" in stellar spectra may indicate the stage of evolution, and relative temperature in stars of different types, as, for instance, in the Harvard classification. E. C. Pickering devises a new method of ascertaining the approach or recession of faint stars, adapted to the objective prism, and Wood has produced a light filter of neodymium chlorides which enhances the definition of the spectral lines. Also the mercurial telescope under Wood's deft manipulation may render possible mirrors of indefinite size for zenith use. Bohlin, investigating the galactic system with regard to its structure, origin, and relations in space, concludes that the planetary nebulæ were originally rotating luminous shells of very thin matter; the milky way itself was in its early history such a planetary nebula, now in a very advanced stage of the ring-nebula type.

Keeler's Photographs.—As a tribute to the memory of James Edward Keeler, late director of the Lick Observatory, vol. viii of its publications contains his marvelous collection of photographs of nebulæ and star clusters, made during his last years with the three-foot Crossley reflector, which was an instrument of his special re-creation. These classic photographs form an epoch in astronomy, as they prove the existence of thousands of heretofore unrecorded nebulæ, most of which partake of the spiral structure. Next to the star itself, then, this type of nebula is the most frequent form of object in the sky, so that Keeler's discovery bears significantly on theories of the cosmogony. The reproductions of his original negatives exhibit their fine and faint detail with great fidelity.

Spectroscopic Binaries. — Twenty-one years ago the first spectroscopic binary system was discovered (ζ *Ursæ Majoris*) by Pickering, in 1889. Their number now exceeds sixty with orbits ascertained, about the same as the number of visual binaries. A visual binary is one whose components are so far apart that they are easily recognized in the telescope; in a spectroscopic binary the components are so close together that the telescope is powerless to separate them; their spectra, therefore, blend, and the lines overlap. Schlesinger and Baker, in their comparative study of these interesting stars, conclude with a discussion of double-star evolution. All the observed geometric characteristics of these systems are in accord with the views of Darwin and See, that the two bodies were originally one, and separated in time as by fission; the viscous tides raised in each by the other slowly increasing their distance, period of revolution, and the eccentricity of their orbit. First their spectra are alike for a relatively brief period. Tidal friction acts to increase their distance, and both stars get brighter, in accord with Lane's law. But the less massive component radiates its energy more rapidly, and so runs ahead of the more massive one in the successive stages of its evolution. The less massive star even surpasses the more massive in brightness. This becomes a visual binary. Later, the less massive star becomes too compressed to follow Lane's law, when its brightness rapidly decreases. Then follows a system like that of Sirius, in which the bright star is the more massive. In binary systems the separation seems the best indication of age; close spectroscopic binaries have probably been formed comparatively recently, while, according to Darwin's theory, millions of years must have elapsed before their mutual distance is so great that these systems become visual binaries.

Schlesinger describes the new stellar spectrograph which is used in conjunction with the Keeler memorial telescope, a reflector of thirty-inch aperture. Both these instruments were built by Brashear, whose famous shops are near the observatory at Allegheny.

Campbell delivered at Yale the Silliman lectures, on stellar motions, dealing especially with spectroscopic binaries.

Reform of the Gregorian Calendar.—A movement for the reform of the Gregorian calendar has been recognized by the Swiss Federal Council, and a congress of all nations is to be invited to Berne to arrange a year divided into exactly fifty-two weeks or 364 days.

The four quarters of the year, according to the plan, are to be exactly of the same length, the months 30, 30, and 31 days successively. Thus the thirty-first day of March, June, Sept., and Dec. would always fall on a Sunday. Sunday, under the new arrangement, is to bear no date; and New Year's Day is to be an "extra day." Every leap year would have an off day that would neither be counted nor dated. It would be inserted between June 31 and July 1.

Prof. Harold Jacoby, of the department of astronomy of Columbia University, regards the present calendar as exact enough for all practical purposes, the error amounting to only one day in every 3,333 years. The new plan seems designed rather to make the calendar more convenient than more exact, its purpose being to bring the days of the week on the same date each year. The matter has recently been agitated in scientific journals here and abroad, but the present instance furnished by the Swiss Government is the first official notice taken of the plan.

A somewhat similar movement has occasionally been agitated with a view to bringing Easter on the same date each year.

Bibliography.—The eighth annual issue of the *International Catalogue of Scientific Literature* (Section E, astronomy) will be found useful, but future issues can be greatly improved by more careful classification. The third volume of Sir George Darwin's *Scientific Papers* continues his mathematical researches on cosmic evolution. *The Scientific Papers of Sir William Huggins*, vol. ii, is a unique collection from the master hand; the last work of this eminent pioneer in astrophysics, who laid the foundations of the new science which extended the chemistry and physics of earth to the heavens.

The Ether of Space, by Sir Oliver Lodge, presents his fascinating theories. He makes much of his "ether machine," and concludes that "every cubic millimeter of the universal ether of space must possess the equivalent of a thousand tons, and every part of it must be squirming internally with the velocity of light." He thinks that the ether with all its massiveness and energy may have much psychic significance. Father Hagen's *Atlas Stellarum Variabilium* is continued through seven series, forming an indispensable work for the observer of these interesting objects. *The Study of Stellar Evolution*, by Hale, is an extended account of recent astrophysical research, with especial stress on the observational methods employed. Milham's *How to Identify the Stars* enables one to recognize the more brilliant ones, and to locate conspicuous asterisms. The twelfth volume of the *Works of Huygens* is the second to contain reprints of his published writings, the first ten being devoted to his correspondence. See's *Researches on the Evolution of Stellar Systems*, vol. ii, develops his "capture theory" of the cosmogony, with which he would replace the nebular hypothesis of Laplace. Comets are confidently accounted for as survivals of the outer shell of the solar nebula.

Of general treatises *The History of Astronomy* by Forbes is readable and trustworthy, though in parts necessarily fragmentary, with bibliographies. Sir Robert Ball's *Story of the Heavens* and his *Story of the Sun* have been fully revised, and remain the standard on popular astronomy by an entertaining and authoritative writer. Dyson's *Astronomy* gives a clear account of the methods that astronomers employ. Instruments are "as simple in principle and far less complicated in detail than a lathe or a steam engine." The chapters on the stars are especially authoritative and up to date. Lowell's *Evolution of Worlds* traces in the author's characteristic style the birth of a solar system, discusses the seemingly probable stages of planetary development, and finally the debilitated old age, desertism, and death of a planet, a very readable presentation of the subject from the author's conception of present-day knowledge, though not the last word of science. Dolmage's *Astronomy of To-day* is a popular introduction in untechnical language, with excellent illustrations. *Curiosities of the Sky*, by Serviss, relates the riddles and mysteries of astronomy which keep even the most advanced students of the science still guessing. Of texts, Sir Norman Lockyer's *Elementary Lessons* has passed to the fifty-second thousand, Young's *Manual* and Comstock's *Elements* to a new edition, and Todd's *New Astronomy* to a thirteenth revised edition.

The Moon, by Serviss, is a well-illustrated popular treatise adapted to general readers. *The Moon*, by Fauth, advances the idea that our satellite is covered with a thick layer of ice. Flammarion's *La Planète Mars*, vol. ii, in summarizing all the observations with special reference to habitability is an unsurpassed thesaurus of current investigation. Wallace's *Is Mars Habitable?* is a critical examination of Lowell's *Mars and Its Canals*, with an alternative explanation, making the planet absolutely uninhabitable. Sampson's *Tables of the Four Great Satellites of Jupiter* provide the means of calculating their positions and phenomena to the year 2000. Eclipses of these moons were observed photometrically at the Harvard Observatory for a quarter century, and Sampson's critical discussion of them, published in the *Harvard Annals*, forms the basis of the new tables.

Halley's Comet, by Turner, of Oxford, reviews the life of Halley and the circumstances that led up to his great discovery. *The Story of the Comets*, by Chambers, simply told for general readers, is the best general English work; of great value to professional astronomers also.

Olcott's *In Starland with a Three-inch Telescope*, is a convenient guide for the amateur, with tables for following the planets from year to year. Arthur's *Time and Its Measurement* gives an excellent account of clocks, ancient and modern. *The American Ephemeris and Nautical Almanac* for 1912 has received a thorough overhauling by Updegraff. Lunar distances are omitted, and there is a welcome doubling of the list of star places. The total eclipses of that year occur April 17th, in Spain, and Oct. 10th, in Brazil.

Among German works the eleventh issue of the complete and systematic *Astronomische Jahresbericht*, by Berberich, reviews the astronomical literature of 1909. The brief summaries of research, drawn from about 300 periodicals and proceedings of scientific societies, are especially valuable to contemporary investigators. Wolf's *Die Milchstrasse*, contains ten full-page plates from his excellent photographs of the stellar aggregations.

Conclusion.—Many of the problems essayed by astronomers of to-day are ever widening in their scope, and it is almost hopeless to attempt their solution with present means, whether instrumental or human. More workers are needed, enhanced sensitiveness of photographic plates, increased light-gathering power, and most of all, better sites for telescopes free from atmospheric disturbances. Progress in astronomical research in the last forty years has developed the necessity of observatory and laboratory combined, with the cost of equipment and maintenance and use enormously increased. All these requisites must be met by interest in and sympathy with the astronomer and his aims, and adequate provision for his needs. Many splendid American telescopes remain unused for lack of proper endowment; notwithstanding the salient gifts of Lick and Yerkes and Boyden, astronomy is yet in need of abounding general endowment.

While in 1911 astronomers are not expecting a Halley's comet to excite popular attention, nevertheless a total eclipse of the sun visits the Pacific on April 28th; and another opposition of Mars, though less favorable than the last, is due in Nov. Much research with improved apparatus will be attempted, and astronomical eyes kept alert.

XXIII. GEOLOGY, METEOROLOGY, TERRESTRIAL MAGNETISM, AND GEOGRAPHY

GEOLOGY

STRUCTURAL AND DYNAMIC

J. B. Woodworth

Structural.—The broad structural and stratigraphic features of the North American continent have been known now for nearly a quarter of a century, yet at no time in the past of American geological science have such strides been made in the interpretation of the stratified rocks and mountain built structures as have been witnessed by the opening years of the century. Dynamical geology has also been enriched either by new concepts gained from American studies or by the application to local problems of the theoretical gains accomplished by fellow geologists in other lands. Among the causes which have contributed to this advance must be recognized the writings of Edouard Suess, generally neglected in America prior to the appearance of the French translation by DeMargerie and his confrères, and the recent English rendering under the title *The Face of the Earth*, by Prof. Sollas. To this work may be traced a stimulation of thought concerning the larger problems of the earth's outer architecture, especially in the matter of lateral displacement or creep of the earth crust in mountain belts. F. B. Taylor discusses (in *Bulletin of the Geological Society of America*, Vol. XXI), with Suessian sweep of view, the crustal creep of the Tertiary mountain belt of the world. Reudemann, in the *Annual Report of the New York State Museum for 1909*, directs attention to the symmetrical arrangement of the land elements of the paleozoic platform of northeastern North America regarding the area as modified in structure by ancient pressures from the Atlantic region in a manner to give rise to the Appalachian basin folds and the Cincinnati uplift or parma. W. Joerg (*Bulletin of the American Geographical Society*, Vol. XLII), also with the views of Suess in mind, divides the northern portion of the Rocky Mountain region into districts displaying diverse pressure effects.

A second prominent factor in the advanced thought of the present period was introduced in the work of Prof. Chamberlin largely embodied in the text-book of geology by Chamberlin and Salisbury, in which the whole structure of the globe is stated anew in the terms of the planetesimal hypothesis. In the *Journal of Geology*, Vol. XVIII, R. T. Chamberlin, *le fils*, following out suggestions made in that work, attempts on the basis of the modern detailed sections of the folded Appalachian chain to determine the thickness of the rock shell involved in mountain building, which thickness, on the basis assumed, amounts to 5.17 miles.

Stratigraphic Geology.—In the field of stratigraphic geology where fossils constitute the basis of establishing a chronology, a most important paper has appeared in the *Bulletin of the Geological Society of America* by Prof. Scheuchert, of Yale. The author sets forth the results of many years' detailed study of the vertical and horizontal distribution of American fossils, and presents a series of hypothetical maps of the distribution of land and sea from the Cambrian to the recent period, embodying many alterations in the formerly conceived outlines of the successive stages of continental evolution. In this work recognition is made of the large amount of nonmarine sediment which enters into the geological column, the identification of which has been facilitated by the recent critical essays of Prof. Barrell, of Yale. As a result of his own investigations Prof. Scheuchert finds reasons for revising the American formation scale and proposes a somewhat radical subdivision of the stratigraphic succession. Closely related to this paper is the vice presidential address of Mr. Bailey Willis before section E of the American Association for the Advancement of Science at its Boston-Cambridge meeting (*Science*, Vol. XXXI). In this paper the principles of paleography or the reconstruction of the past outline of continents and ocean basins are discussed more from the point of view of the geologist than that of the paleontologist. Mr. Willis holds with most English-speaking geologists "that the great ocean basins are permanent features of the earth's surface, and they have existed, where they now are, with moderate changes of outline, since the waters first gathered." One cannot but remark here the fixity of this idea in England and the United States, in contrast with the much greater latitude of change postulated by the geologists of continental Europe, particularly in the case of the Atlantic Ocean. The feature is so striking as to constitute the division of geologists into two schools, in which dynamical concepts have a strongly marked geographic setting. Willis, in touching upon the generally mild climates of the globe, as contrasted with glacial periods, appears to recognize the possibility of a change in the existing oceanic circulation being brought about as suggested by Chamberlin in 1906. Chamberlin pointed out that if the oceanic circulation were reversed so that the warm highly saline waters of the equatorial regions sank and flowed poleward with a compensating equatorward creep of the chilled polar sea water, an explanation would be afforded of the uniform sea temperatures indicated by the faunas and floras of the past.

Pertinent to the question of past climate in this connection is the note by David White and Knowlton (*Science*, XXXI), stating as their conclusion, based upon a study of fossil floras, that we are still in the glacial period so far as abnormal climatic extremes are concerned.

As resurveys of districts covered by the earlier geological maps are continually in progress, no small amount of the annual contributions to geological literature is devoted to corrections and additions. Thus Dr. T. W. Vaughan notes the discovery of a lower horizon of the Miocene at Porter's Landing, Ga., than has hitherto been known south of Virginia. L. F. Noble describes in detail the geology of the pre-Cambrian formations of the Grand Cañon of the Colorado (*American Journal of Science*, XXIX). A remarkable feature in the section is an intrusive sheet or sill of diabase from 650 to 950 feet thick. R. W. Stone and W. R. Calvert (*Economic Geology*, V) find that the so-called Livingston formation of Montana is composed of local volcanic accumulations varying in age from lower Colorado to Fort Union Times inclusive. Prof. H. S. Williams discusses (*Bulletin of the Geological Society of America*, XX) the age of the Gaspé sandstones, the fossils of which rock comprise species elsewhere occurring at such separate horizons as the Oriskany and the Hamilton.

Numerous minor contributions to local geological formations have appeared in current numbers of the *Bulletin of the Geological Society of America*. Much geological structure and stratigraphy is described in reports mainly of an economic purport, as in the case of a report by H. S. Gale on the *Coal Fields of Colorado and Northeastern Utah* (*Bulletin 415, United States Geological Survey*). No small amount of work of a preliminary character is also to be found in the water-supply papers of the United States Geological Survey, the geological conditions which control the distribution of underground water being at present a matter of special investigation by the national and several state surveys.

A useful summary of the formational and structural geology of the

State of California is presented by Prof. James P. Smith in the *Journal of Geology*, XVIII. Prof. A. C. Lane adds a second chapter to a matter of like import taken up by him for the State of Michigan in the same journal.

Among the most perplexing stratigraphic problems of the continent is the question of the age and true relations of a group of deposits in Kansas on the border between the Paleozoic and Mesozoic sections. Prof. C. S. Prosser discusses the matter at large (*Journal of Geology*, XVIII) and adheres to the view of the Permian age of the beds in question.

The extensive Tertiary deposits of the plains and basins of the eastern Rocky Mountain region with their surprising finds of extinct mammals continue to yield important results. The most important work of a geological character brought out by an American publishing house this year deals with this subject.—*The Age of Mammals*, by Prof. H. S. Osborne, in which work, the geological structure and the fossil forms are fully illustrated. Among the advances which this work records none is more striking than the better understanding of the geographic conditions under which certain formations formerly regarded as deposited in vast lakes were laid down. In the case of some of the deposits it is now recognized that winds were the chief agency of transportation and deposition, and in other cases streams coursing over plains in front of the newly uplifted mountain ranges. We are thus enabled to picture the region in the past very much as it is now, except that rivers were as in the region of sedimentation laying down gravels, sands, and silts instead of so largely removing them as in the present cycle. The doctrine of uniformity of existing causes, the keynote of Lyell's life work, has been nowhere more patently illustrated than in this western field.

Dynamic Geology.—In the field of dynamic geology aside from the advances above noted, the journals of the year contain many papers dealing with local studies of structural peculiarities, such as the relations of folds and joints in the quartzites of the Baraboo range (E. Steidtmann, *Journal of Geology*, XVIII). Some peculiar effects of great pressure are described by W. C. Phalen from the vicinity of Ellijay, Ga., where quartz veins have been squeezed out in detached small stringers looking like pebbles (*Journal of Geology*, XVIII). Among the novelties of the year should be mentioned the "rock glaciers" or *chrystocrenes* of the Yukon region, near Dawson, described in two papers by S. R. Capps and J. B. Tyrrell. According to the latter writer these masses of blocks and boulders flowing like glaciers are interstitially filled with ice, the result of the freezing of spring waters, to which circumstance the name *chrystocrene* has reference. (*Journal of Geology*, XVIII.)

The Glacial Theory.—As for the glacial theory, in advancing which Louis Agassiz made a greater contribution to geology than he knew, it continues to find new applications to long-observed phenomena, particularly in the case of many so-called conglomerates of the closing stages of the Paleozoic era. Following the recognition of the glacial origin of the conglomeratic Permian beds of India, Australia, South Africa, and Brazil, and the recent discoveries of striated stones in the Huronian conglomerates of Ontario by Prof. Coleman, the year witnessed an interest in the matter in the United States. Joseph A. Taff describes ice-bourne boulder deposits of mid-Carboniferous age in the Ouachita Mountain region of southeastern Oklahoma (*Bulletin of the American Geological Society*, XX), and Robt. W. Sayles and L. LaForge announce (*Science*, XXXII) the existence of a formation at the top of the Roxbury conglomerate in the Boston area, having the textural characters of an ancient till, including a few finds of striated stones, which the authors believe to be of glacial origin. The possible correlation of this deposit with the well-established glacial epoch of the Permian, adds significance to the investigation and calls for a thorough reëxamination of other conglomerate formations in the light of a possible glacial origin.

A notable contribution to the correlation of the epochs of ice advance and retreat in North America during the Pleistocene period with similar episodes in northwestern Europe is made by Frank Leverett in a German publication (*Zeitschrift für Gletscherkunde*, IV). As yet these epochs of advance and retreat, or of appearance and disappearance of the Pleistocene ice sheets, is almost entirely based on phenomena exhibited in the Mississippi Valley and the adjacent region; and little or no progress has been made in recent years in extending the subdivisions there recognized into the glaciated area of the eastern United States, though older drift sheets are there recognized at several localities. The usual number of local contributions have appeared during the year in scientific journals regarding the nature and position of such older drift deposits in the interior of the Continent.

The Geological Survey.—The United States Geological Survey continues to be the largest body of active field geologists perhaps in the world. Its publications are numerous and valuable. To meet a certain demand, the geologic folio parts have appeared during the year in book form with infolded maps which are more convenient for transportation in the field than the large atlas sheets. As an example there may be cited the report on the *Watkins Glen and Catalonk Folio* by Profs. H. S. Williams, R. S. Tarr, and Mr. Kindle (Folio 169). Several state surveys are engaged in field work, many of them in direct coöperation with the national geological survey.

The Geological Society.—The Geological Society of America has enrolled in its membership most of the active workers on the continent, and its publications have taken a high rank in the annals of the science; they include each year many contributions of importance in structural and dynamical geology. Several scientific societies contribute directly to the advancement of geological investigation. As an example may be cited the expedition sent to Alaska in 1910 by the National Geographic Society under the charge of Prof. L. A. Martin.

PETROGRAPHY AND MINERALOGY

CHARLES PALACHE

Petrography.—The publication late in 1909 of two works, *Igneous Rocks*, by J. P. Iddings, in America, and *The Natural History of Igneous Rocks*, by A. Harker, in England, marks an epoch in the history of this science. They cover substantially the same ground. Both bring to the study of the igneous rocks a wealth of new material and new points of view drawn largely from recent advances in physical chemistry. The laws governing the crystallization of igneous rock magmas are shown to be essentially the same as those controlling ordinary solutions, and the complete elucidation of the former awaits only more detailed knowledge of the behavior of individual minerals under conditions found in rock formation within the earth's crust. The broad views of these authors concerning the nature and relations of rock magmas mark a distinct advance.

Significant advances toward adequate knowledge of the rock minerals have been made in America through the studies carried on in the Carnegie Geophysical laboratory by Day and his associates. They have investigated thus far the feldspars, the lime-magnesia pyroxenes, calcium silicate, aluminum silicate, and quartz, employing where necessary pure artificial preparations and working with improved apparatus under conditions permitting exact physical measurements, such as have been nowhere else attained in this class of investigations. These studies have been published during the last four years in the *American Journal of Science;* and although no addition to the series has been made in the current year except as related to the perfection of instrumental equipment, further results of value may be confidently expected in the future. For most of the substances named there have been made more accurate fusion-point determinations; the complex changes in crystal structure which some of them undergo at various temperatures have been followed out, and temperature limits for the existence of certain of them established, giving the first accurate data for the establishment of what may be called a "geological thermometer." By means of this scale a more definite conception can be had of the actual temperature existing at the time of formation of certain rocks of common occurrence, such as granite.

The researches of Adams into the flow of rocks have shown that it is possible to produce experimental conditions of heat and pressure comparable with those which are active at great depths within the earth; and that under their influence structures due to plastic flow (in the case of marble) may be obtained which are altogether similar to structures characteristic of the metamorphic rocks. (*American Journal of Science*, xxix, 1910.)

Thus exact experimental results are gradually taking the place of approximate or assumed conditions in the study of rock formation in the earth.

The most significant contribution hitherto made to petrography by American students is the Quantitative Classification of Igneous Rocks, promulgated some four years since. This classification, based wholly on chemical composition and a derived theoretical mineralogical composition, has been adversely criticised, especially by English petrographers, although it has been widely adopted in English-speaking countries. Cross, one of the authors of this classification, has written a very able and convincing argument in behalf of its principles, addressed especially to his English critics. He points out the impossibility with present knowledge of making a "natural classification," such as they demand; the confusion in present nomenclature due to lack of a logical principle in present schemes; and the superiority of the new "artificial" classification over those now accepted. (*Quarterly Journal of the Geological Society*, London, xlvi, 1910.)

Mineralogy.—In this science the past year has failed to mark any signal advance comparable with those of recent years. The publication by the New York State Museum of a monograph by Whitlock on the calcites of that state is noteworthy. The report presents not only very fully illustrated descriptions of a number of remarkable occurrences of calcite, but contains as well a very lucid account of the crystallography of that mineral and a complete list of the multitude of crystal forms thus far discovered upon it. Some interesting deductions are also made upon the relation of certain groups of forms found on these crystals to their geological environment.

Tutton has given in his volume on *Crystalline Structure and Chemical Constitution* a very interesting summary of the results obtained in his investigations, begun some twenty years since, and the subject of frequent papers in the periodical press. Through the invention and construction of various instruments of high precision for the cutting of orientated sections of crystals, and for the measurement of their physical and optical properties, he has been able to raise the accuracy of goniometric and optical-constant measurements from a very low level to that of the most refined determination of atomic weights or of such physical measurements as that of the wave length of light. He has also been able for the first time to place the theory of isomorphic replacement, as long ago propounded by Mitscherlich, upon a secure experimental basis.

A descriptive work which will prove most acceptable to mineralogists is that of Zambonini upon the minerals of Mt. Vesuvius. We have here for the first time an adequate and comprehensive description of this unique and classic group of minerals. Full study of the great collection of the University of Naples has enabled him not only to give a complete portrayal of a number of species but partially understood before, but also to add several new species to the science.

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EARTHQUAKES AND VOLCANOES

Harry Fielding Reid

Earthquakes.—Ninety-five per cent of all earthquakes occur along two great circles of the earth's surface, one surrounding the Pacific Ocean, and the other passing through the Mediterranean, the Himalayas, and the Antilles. The two circles are represented in America by the Aleutian Islands, the Pacific Coast of Alaska and of the United States, Mexico, Central America, and the Pacific Coast of South America, and by the Antilles and the northern coast of South America. Nearly all strong earthquakes occur near these circles, although occasionally a severe shock is felt elsewhere, such as the New Madrid earthquake of 1811 and the Charleston earthquake of 1886. Many slight earthquakes also occur in various districts of the United States, the principal being the region near southeastern New Hampshire, the region near the New Madrid area in southeast Missouri, and the plateau region of Utah and Arizona. Spasmodic earthquakes, usually very light, may occur almost anywhere.

The year 1910 began with a pretty strong earthquake in the early morning of Jan. 1st, whose origin was in the western part of the Caribbean Sea; Yucatan felt the shock rather strongly. The most serious earthquakes of the year were in Costa Rica in April and May; they entirely destroyed the city of Cartago and did serious damage in other neighboring towns. The volcano of Poaz, thirty miles northwest of San José, which has been quiescent for some time, threw stones and cinders into the air on Jan. 25th. It is not clear that this eruption bore any relation to the earthquake shocks which began nearly three months later, for the outburst does not seem to have been repeated. April 13th and 14th earthquakes were felt in San José, Cartago, and the neighboring country; houses were damaged and communications between the cities was interrupted; many people abandoned their homes and lived in tents, but there was no loss of life. The government temporarily suspended business. More shocks were reported on the 20th, and then quiet seemed to be restored; but at 6.50 P.M., May 4th, a very sudden and heavy shock completely destroyed the town of Cartago, leveling nearly all the buildings to the ground, including the Peace Palace, erected by Mr. Andrew Carnegie for the Central American Court of Arbitration. San José, fourteen miles west of Cartago, suffered some damage, but comparatively little. More than a thousand persons were killed, and the property loss must have been several million dollars. About two hours after the earthquake a large meteor crossed the heavens and gave rise to the erroneous report that the neighboring volcanoes were in activity. Aftershocks of the great earthquake continued for several weeks.

Light shocks were felt at Skagway, Alaska, on March 14th and July 6th. At Unimak Pass in the Aleutian Islands fairly strong shocks were felt on June 24th, probably in connection with the volcanic outburst in that region. (See XXIII, *Volcanoes.*)

The great California earthquake of 1906 resulted from a slip along the San Andreas fault from Cape Mendicino to Monterey Bay. March 10th of this year there was a fairly severe shock, central near Chittenden, near the southern end of the slip of 1906. It was strong enough to make houses creak and to throw down objects from shelves, though no serious damage was done. It was felt at San Francisco, and as far north as Santa Rosa and Sacramento, and probably over an area of 40,000 square miles. May 6th a shock was felt in the San Joaquin Valley, from Bakersfield to Sacramento, over an area of 40,000 square miles; its center was a little south of Fresno. A slight shock was felt at Bridgeport, Mono County, on the same day, but at an earlier hour. A slight shock was felt at San Bernardino April 10th; it was also reported from San Diego, ninety-five miles to the south. May 12th a fairly strong shock sensible over an area of about 1,000 square miles was central near Corona, not far from San Bernardino, and another shock, considerably stronger, was felt May 15th, followed by a lighter shock five hours later. The strong shock was felt over an area of about 30,000 square miles, central near Corona. These shocks were probably due to slips on the fault at the base of the Santa Ana Mountains. Shocks were reported in Utah at Richfield, Jan. 12th, which broke window panes, and at Salt Lake City, May 2d and 22d. The last one was strong enough to throw down a few chimneys and to crack a few walls; it occurred at 7.28 A.M. and was followed by several lighter shocks, but it was only felt over an area of 3,000 square miles. It was probably due to a slip on the fault at the base of the Wasatch Mountains. Sept. 23d rather strong shocks are reported from the northern part of Arizona, but little information has been obtainable regarding them.

Slight shocks were felt in the southwestern part of Maine Jan. 22d; in the Merrimac Valley, between Nashua, N. H., and Lowell, Mass., Aug. 21st; and at Sunapee, N. H., Aug. 30th; at Westminster, Md., Jan. 23d; at Catonsville, Md., April 23d. Shocks were reported from Atlantic City, N. J., and the neighboring coast the same day, but they may have been due to naval gun practice.

Light shocks occurred at Saranac Lake, N. Y., March 3d and in the western part of Long Island, May 1st; in the Shenandoah Valley, Va., in the neighborhood of New Market, Feb. 8th, and in Hempstead and Waller counties, Tex., May 8th and 11th.

May 30th the city of Mexico was shaken, but no damage done, although the people were very much frightened. Two shocks, June 3d and Aug. 3d, respectively, are reported from Santiago, Cuba, but neither did any damage. Jamaica had two slight shocks Jan. 1st, but not at the time of the strong shock near Yucatan. San Domingo, W. I., felt a slight shock May 11th, and on Jan. 23d shocks were felt in all the Windward islands for a distance of about 400 miles, from Demarara, B. G., through Trinidad, Grenada, St. Vincent, and St. Lucia to Martinique; they were stronger in the southern part. No damage was done.

A shock was reported from Bogota, Colombia, South America, on May 15th, without detail.

The importance of seismological studies has been recognized by Mexico and Chile. Mexico has established a seismological service under its geological survey with the central station at Tacubaya; it has five stations of the first class and about fifty stations of the second class. Chile has organized a service under the direction of the celebrated seismologist, Count de Montessus de Ballore. The central station is at Santiago; there are four stations of the second class, and thirty of the third class. The United States, within whose limits very severe earthquakes occasionally occur, has taken no official steps in this direction, and has left this work entirely to the universities.

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Volcanoes.—The volcanoes of America are limited to the Pacific Coast from the Aleutian Islands to the southern part of South America. Those now active are on the line of the Aleutian Islands and its continuation to Mt. Wrangle; in Mexico, Central America, and South America. June 24th earthquakes were reported from Unimak Pass, and at the same time the volcanoes Pavlof, Acutan, and several others to the northwest were in active eruption. July 19th Mt. Shishalin, Unimak Island, was reported as being in continued eruption, the date when the eruption began not being known. Sept. 1st strong earthquakes were felt in Unalaska, and at the same time a new island was added to the Bogoslof group, about thirty miles to the west. This group is subject to remarkable changes. New islands, due to the outpouring of volcanic material, rise from time to time about the sea, and are then greatly modified in form and sometimes entirely washed away by the waves. A new island, Perry Peak, appeared in 1909, and this year another island, near the former, arose above the water at a place where soundings last year indicated a depth of seventy fathoms.

Jan. 25th there was a slight eruption of Mt. Poaz in Costa Rica, but the reported active eruption of this volcano and of Mt. Irasu at the time of the severe earthquakes in April and May, was incorrect.

Mt. Pelée in Martinique and La Souffrière in St. Vincent have shown no activity during the year in spite of the reports to the contrary last Jan. The volcanoes of Hawaii have also continued in a quiet condition.

ECONOMIC GEOLOGY

F. L. Ransome

In this field the year has been rather uneventful as regards publications of the first importance or in conspicuous advances in theory. The question of how ore deposits are formed is one of perennial interest and has been debated with much animation. The outcome has been some readjustment of the weight of probabilities among hypotheses previously advanced rather than the annunciation of any wholly new idea. There is an increasing tendency on the part of investigators to admit that various ore deposits may have originated in different ways, and to see in the comparative rarity of important natural accumulations of the metals an indication that the formation of ore bodies takes place only when a number of favorable conditions are simultaneously at hand. To a large extent further progress in the theory of ore deposits awaits the results of quantitative experimental work, such as is being carried out so successfully by the geophysical laboratory of the Carnegie Institution. The science is in need of accurate data with which to check the many suggestions and hypotheses already offered in explanation of ore genesis.

The most important single publication of the year, one which expresses the concern now felt by the leading nations as to the future of their fundamental natural resources, is the two volumes on the *Iron Ore Resources of the World*, with their accompanying atlas, compiled under the auspices of the Eleventh International Geological Congress, Stockholm, 1910. The various countries are treated by experts in their respective deposits who coöperated in most cases with the national geologic surveys. While the work is primarily statistical, a reliable forecast of the future depends so largely upon a clear understanding of the geologic conditions of occurrence and origin, that its scope was broadened into a compendious and valuable scientific treatise on the iron ore deposits of the world.

Of publications on economic geology in our own country, the most important issued was *The Ore Deposits of New Mexico*[1] by W. Lindgren, L. C. Graton, and C. H. Gordon. In this work the features of most general interest are the distinction of pre-Cambrian ore deposits from younger deposits in the same region, and the establishment of criteria whereby such ancient ores can in general be recognized. The volume treats of all the ore deposits in a state in connection with the geologic history of a broad region, and thus brings out relationships that more detailed investigations of isolated districts have failed to discover.

The organization of the new geological survey of Tennessee under the able directorship of Dr. George H. Ashley, following closely the establishment of efficient state surveys in Colorado and Florida, is proof that the people of those states realize how close is the connection between accurate scientific knowledge and successful utilization of their natural resources. In his preliminary bulletins on *The Establishment, Purpose, Scope, and Methods of the State Geo-*

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[1] Professional Paper: U. S. Geological Survey No. 68, 1910.

logical Survey and an *Outline Introduction to the Mineral Resources of Tennessee*, Dr. Ashley has given an earnest of the excellent results to be expected from his administration.

In the application of geology to the development of water, the stress has been laid upon the available quantity, composition, and cost of the water, rather than upon the now fairly well understood geological conditions under which it accumulates in situations within reach by the drill.

If the attention of economic geologists has been largely diverted into the measurement, estimation and evaluation of material resources, the fact is not to be altogether deplored, even from the purely scientific point of view. The demand for such work is too general, and touches too deeply our welfare as a nation to be ignored. Moreover, as data accumulate and policies shape themselves the pressure for statistics and estimates is likely to lessen, and the geologist can return to the problems in which he is most interested, armed with a truer appreciation of the value of quantitative thinking.

METEOROLOGY

ROBERT DE C. WARD

After an interval of several years since the publication of the last American text-book of meteorology, the year 1910 brought a new volume by Dr. Willis L. Moore, of the Weather Bureau, which will be taken as an authoritative summary of recent progress.[1] This book is not a treatise, nor does it deal extensively with theory. It presents the principal facts of meteorology with special reference to American students and American contributions to the science. Weather forecasting for the United States is given particular attention.

It is surely to be regarded as progress when important memoirs originally written and printed in foreign languages, are made accessible to a wider circle of persons by translation. American meteorology now owes a third collection of such translations to Prof. Cleveland Abbe, who has, for many years, been laboring earnestly to establish the science upon a firmer basis, and to encourage more advanced instruction in it.[2] Two volumes of Prof. Abbe's translations of foreign memoirs on meteorological subjects had already been published, the first in 1877 (*Smithsonian Report for 1877*) and the second in 1891 (*Smithsonian Miscellaneous Collections*). These three volumes constitute a series which American students who deal with the more involved physical and mathematical aspects of meteorology may well be glad to have in English.

Since the reorganization of the publications of the weather bureau in 1909, the quarterly *Bulletin of the Mount Weather Observatory* has been devoted to somewhat technical topics which deal largely with the numerous researches in progress at Mount Weather. These investigations relate chiefly to the meteorological conditions of the free air, as determined by balloon and kite observations, but also concern pyrheliometry and other physical problems. The results of the balloon and kite flights are regularly summarized in the *Bulletin*, and the discussions have brought out a number of noteworthy facts in connection with our rapidly advancing knowledge of the upper air.[3]

Blue Hill Observatory, the pioneer institution in the exploration of the free air, has continued the investigations along this line with unbroken regularity and with admirable results. Studies of the upper winds have been carried on by Andrew H. Palmer. Prof. A. Lawrence Rotch has discussed the relation of the wind to aërial navigation. It appears that at night a suitable level for aërial navigation in summer is 1,000 meters, but in the daytime it is necessary to ascend above the level of the cumulus clouds.[4]

The studies on the dynamics of the atmosphere, in which Prof. Frank H. Bigelow has for some years been engaged, have been continued.[5]

The important question of the relation of climate and crops in North America is being investigated by

Henryk Arctowski.[6] The conclusion is that the explanation of the wheat crop distribution involves recourse to meteorological influences which depend on the general circulation of the atmosphere. In other words, the ultimate end and object of the investigation is the forecasting of the wheat yield on a meteorological basis.

Climatology.—The usual method of presenting climatological averages is unsatisfactory, because insufficient emphasis is laid upon the weather types which make up the climate. A definite scheme for including the cyclonic and anticyclonic unit, as well as the usual time units of day, month, and year, has now been proposed.[7] Illustrative barograph and thermograph curves for Nashua, N. H., and the data for Boston, Mass., for Jan. to March, 1909, have been treated in accordance with the suggested scheme. The idea is novel.

A model of temperatures, in plaster of Paris, is something wholly new in climatology. Such a model, representing the mean hourly temperatures of Boston, Mass., for the period 1890–1904, inclusive, has been constructed by Andrew H. Palmer, of the staff of the Blue Hill Observatory.[8] The same writer has also made a detailed study of the temperatures of Boston, based on thirty-eight years' records, in accordance with the scheme of treatment suggested by Hann.[9] This is one of the few cases in which the temperature data for a station in the United States have been discussed systematically, in scientific form, and with completeness.

In connection with the more complete collection of climatological observations for the United States, Prof. F. H. Bigelow has continued his important *Studies on the Phenomena of the Evaporation of Water over Lakes and Reservoirs* with special reference to the evaporation at Salton Sea, Cal., the results of his comprehensive investigation being of universal application.[10] Prof. Bigelow has also investigated *The Catchment of Snowfall by Means of Large Snow Bins and Towers*, in order that some practicable form of snow gauge may be constructed for use at mountain stations in the western United States.[11]

Forests and Stream Flow. — The ever-present question of the influence of forests upon climate and stream flow has been brought prominently to the attention of the public during the year because of the interest in the establishment of new forest reserves. In a report made to the committee on agriculture of the House of Representatives, Prof. Willis L. Moore discussed this important matter.[12] That portion of his report which deals with forests in their influence upon climate is on the whole a fair presentation of the views generally held by meteorologists; but in the discussion of the effects of forests and of deforestation upon floods and run-off, the author can hardly be said to have stated the opinions held by the majority of engineers in this matter. Prof. Moore's paper gave rise to an animated discussion, articles both pro and con having appeared in various engineering and forestry journals.

The Control of the Weather.—In the course of his inaugural address to the British Institution of Electrical Engineers Nov. 11, 1910, Mr. S. Z. de Ferranti, the president, said he believed the time would come when it would be thought no more wonderful largely to control our weather than it was now thought wonderful to control the water after it had fallen on the land. He thought that it would be possible to acquire knowledge which would enable us largely to control by electrical means the sunshine which reached us, and in a climate which usually had ample moisture in the atmosphere to produce rainfall when and where we required it. It might be possible, when we knew a great deal more about electricity than we do today, to set up an electrical defense along our coasts by which we could cause the moisture in the clouds to fall in the form of rain, and so prevent these clouds drifting over the country between ourselves and the sun, which they now blotted out. It also seemed to him that it would be possible, when more water on the country was required, to cause the falling of rain from the clouds passing over the highest part of the country and so produce an abundance of water which, properly used, would greatly add to the fertility of the country.

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TERRESTRIAL MAGNETISM

L. A. BAUER

Doubtless the achievement of greatest importance in magnetic research, from a practical as well as a scientific standpoint, has been the successful construction of a vessel, the *Carnegie*, specially adapted for making oceanic magnetic surveys under the auspices of the Carnegie Institution of Washington. In this vessel all materials likely to affect the compass were excluded as far as practicable. She is wooden built, brigantine rig; her displacement is 600 tons; length over all, 155½ feet; length on load water line, 128⅓ feet; beam, molded, 33 feet; mean draft, 12 feet and 7 inches, and she is provided with a 150 H.P. producer gas engine for auxiliary propulsion. She is thus not only unique in her construction, but is also the first sea-going vessel provided with the type of engine stated. Her first and trial cruise was in the North Atlantic ocean, during the period Sept., 1909, and Feb., 1910, embracing 8,000 nautical miles and touching at the following ports: Greenport, L. I.; St. Johns, N. F.; Falmouth, Eng.; Madeiras, Bermudas, and Brooklyn.

The results obtained on this first cruise have attracted no little attention and have been adopted as correct by the leading hydrographic establishments. Briefly stated they are:

Except for the portion of the cruise from 48°.5 N., 47° W. to Falmouth Bay and thence to Madeira, all charts show too low west magnetic declination (variation of the compass) over the portion of the Atlantic Ocean covered by the *Carnegie*. While the correction is in general less than a degree, it is unfortunately in the same direction for about 5,000 miles, and hence the resulting error in a ship's course based on the present mariners' charts may be accumulative and ultimately reach a considerable amount. The maximum chart error at any one point may be from 1°.3 to 2°.6 according to the chart used.

Equally important errors, as far as the theory of the earth's magnetism was concerned, were found in the charts giving the dip of the magnetic needle and the magnetic force. The systematic errors in the compass direction shown to exist on the charts used by mariners, appear to be largely due to erroneous allowance of secular change—i. e., the change going on in the compass direction from year to year. The law governing these changes is at present not known. In fact, as has been conclusively shown by recent important publications of the United States Coast and Geodetic Survey and of foreign magnetic institutions, it is so complex in its nature that compass directions if predicted for a period of five or ten years, upon present data, may be in error by amounts sufficient to affect the purely practical interests of surveying and navigation. Further information along these lines will soon be available, as the *Carnegie* left Brooklyn again in June, 1910, to be gone three years and to carry on her work in all the oceans. Also several recent land magnetic surveys are nearing completion, notably those under the auspices of France, Germany, Great Britain, Italy, Russia, United States, South American countries, and the Carnegie Institution of Washington.

Magnetic Storms.—Some progress has also been made during the year in the elucidation of the mysterious origin and nature of the so-called magnetic storms which, without a moment's notice, may swing the compass out of its true direction by several degrees; the chief papers are by Chree (Kew Observatory, Eng.); Faris and Bauer (Washington). Chree and Bauer have obtained some results which do not accord seemingly with the theory, elaborated by Birkeland and Störmer of Christiania, that terrestrial magnetic disturbances are due chiefly to cathode rays emanating from the sun. However, Birkeland is at present working on a second volume of his researches, and it is possible that he may have other evidence, than that already published. Bauer and Faris have shown that, strictly speaking, these storms do not begin at absolutely the same instant of time, as has heretofore been largely assumed but, instead, the times of beginning at distant observatories may differ from each other by several minutes and even by hours, depending upon the character of the storm. Bauer seeks to account for the various rates of propagation of magnetic storms by ascribing their origin to ionic currents in the upper regions of the atmosphere, these currents being caused primarily by solar radiations whose chief effect is to increase the electrical conductivity of the atmosphere. The velocity of the currents depends upon their height above the earth; for a height of fifty to seventy-five miles they would pass around the globe in three to four minutes. The lower the currents the slower the rate of travel, and other things being equal the greater would be their effect on magnetic needles. According to this view, sun spots are not the direct cause of our magnetic storms, but only have an indirect effect, radiations emanating from them merely serving to set into operation forces already existing. This conclusion is in line with the calculation of Lord Kelvin, and with the more recent one of Schuster, who showed that the energy involved in even the average magnetic storm is of such magnitude as to make doubtful a solar origin, and that more likely we must look to terrestrial sources of energy such as that of the earth's rotation.

During the year was received the concluding volume on the magnetic work of the British Antarctic Expedition of 1901–04; this volume containing a valuable discussion by Dr. Charles Chree of the *Discovery's* observatory observations at winter quarters in latitude 77° 51′ South and longitude 166° 45′ East. In addition to the usual tables of hourly values of the magnetic elements, of the daily, the annual, and of the secular variations, and results of related analyses, Chree fortunately devotes considerable space to a discussion of magnetic disturbances of various types. In Appendix B he makes an examination of Antarctic disturbances from Oct., 1902, to March, 1903, simultaneous with those discussed by Prof. Kr. Birkeland in Vol. I of *The Norwegian Aurora Polaris Expedition*, 1902–03. While he finds correspondence, his examination also discloses certain disagreements from the effects predicted by Birkeland, thus showing the directions in which the latter's theory requires amplification.

The South Magnetic Pole.—The approximate position of the south magnetic pole was determined by the highly successful Shackleton Antarctic expedition in the beginning of 1909; an account of the experiences encountered by the observer, Douglas Mawson, on the magnetic pole trip is contained in Shackleton's *The Heart of the Antarctic*, published this year. The position assigned is 72° 25′ South and 155° 16′ East—forty miles distant of the position (72° 51′ South, 156° 25′ East) determined by the British Antarctic expedition in 1903; the observations in either case were not sufficient to warrant drawing a definite conclusion as to actual change of position of the pole between 1903 and 1909.

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GEOGRAPHY

INTRODUCTION

W. M. Davis

Of geography, the first science met in school, we early gain an elementary acquaintance, which is extended after school days chiefly by widespread interest in travel—either in our own travel, opportunity for which now comes to so many through commercial or engineering enterprise, through mission duty, or through study, sport and pleasure seeking—or in some one else's travel, nowadays vividly presented to stay-at-homes by well illustrated lectures, magazines, and books. But advanced, scientific geography, for the cultivation of which careful preparation is just as necessary as it is for botany or zoölogy or geology, is not yet so generally appreciated with us as in Europe, where the schools—especially in Germany—give better instruction and the universities offer larger opportunity; where geographical societies are more numerous and better equipped, and where well-trained explorers more frequently set forth on journeys of investigation and bring back more thorough records of what they have seen, than is commonly the case in this country. We are, however, making progress in all these directions. Better teaching of geography in our secondary schools had a notable impulse from the report of the Committee of Ten, some eighteen years ago; and the improvement then begun is still in progress. The advance at present is particularly directed toward a fuller development of human geography, especially of commercial geography, as a correction for what many regard as an excessive attention to physical geography, ten years ago. A number of our universities have in recent years created professorships and introduced elective courses in different aspects of geography, physical, regional, and economic. All these educational movements are represented in the *Journal of Geography*, of which the editorship passes this year from its founder, Prof. R. E. Dodge, of Columbia University, to Prof. R. H. Whitbeck, University of Wisconsin.

Popular interest in geography, constantly excited by the news of distant exploration, and greatly supported by the correct photographic portrayal of distant lands—even to the presentation of moving pictures of volcanic eruptions, great waterfalls, and wave-beaten coasts in illustrated lectures—is promoted by the meetings of geographical societies, now formed in a number of our larger cities, and particularly by the National Geographic Society in Washington through its *National Geographic Magazine*, which has gained an extensive circulation on account of the excellence, number, and variety of its plates. Popular organizations, such as the Appalachian Mountain Club in Boston, the Sierra Club of California, and the Mazamas of the Northwest, cultivate an interest in travel by their meetings, publications, and outdoor excursions; the annual summer outing of the Sierra Club is particularly deserving of mention in this connection.

Agencies of Progress. — Advanced and scientific geographical investigations discuss all the elements, inorganic and organic, of a district or region in their interdependent relationships. Such investigations are represented in the work of the geographical departments of certain universities, as indicated above, and by the accounts of expert exploration, as described later. Work of this character is well represented in the *Bulletin of the American Geographical Society* of New York, and by many reports of the United States Geological Survey; as well as by the annual meetings of the Association of American Geographers, membership in which is limited to those who have shown some expertness by original publication, and which is therefore one of the smallest geographical societies in the world. In spite of healthy progress in recent years, we are not so far advanced in geographical as in other sciences; we have indeed made hardly more than a beginning in the scientific phases of the work before us. Not one of our states has yet received thorough, mature, modern treatment, largely because progress in method has outstripped the possible performance of the few trained workers. In relation to history, geography has lately been substantially aided by two conferences planned and directed by Prof. G. H. Blakeslee, at Clark University, Worcester, Mass.; the proceedings of the first conference having been published in a volume entitled *China and the Far East* (Crowell, New York, 1910). International geography is marked this year by the appearance of the proceedings of the Congress held at Geneva, Switzerland, in 1908, and of the preliminary circulars of the next, or Tenth International Congress, to be held at Rome, Italy, in Oct., 1911.

The several subdivisions of geography are treated in the following summaries.

Physical Geography of the Lands.— The physical geography of the lands is at present passing through an interesting phase of scientific evolution in Europe as well as in this country. The barriers that formerly separated geography from geology have broken down; geography is now recognized by the modern scientific geographer as being essentially the geology of to-day, just as geology is seen to be the summation of an endless series of geographies; hence the treatment of land forms in view of their evolution is gradually replacing the more empirical methods heretofore in vogue.

No special advances in the study of land forms are to be noted in 1910; the latest significant advance was the revival, about twelve years ago, of the discussion of glacial erosion as a means of land sculpture, and the demonstration of its great efficiency in formerly glaciated mountains of strong relief. But there is constantly appearing a number of articles in which, as far as the lands are concerned, the question really at issue—though not always so recognized—is the method of treatment, rather than the thing treated. Progress in the way of finding new kinds of land forms is now rare, although new and highly important examples of old kinds of forms are repeatedly reported: witness the recent account of earthquake scarps and changes of level in Alaska by Tarr and Martin, and of the lofty and little dissected peneplains of the Bolivian Andes by Bowman. Progress in the way of making closer study of previously known classes of forms, and of finding better methods of describing them, is going on at a satisfactory rate; it is an important progress because it will in time affect the whole content of the science.

This may be best seen by analyzing the method of presentation in geographical articles. Putting aside articles written largely for entertainment rather than for instruction, the more scientific articles concerning land forms may be grouped under two chief heads, according to whether their method is empirical, in not attempting to go beyond immediately observable facts, or explanatory, in attempting to describe existing land forms in terms of their origin by the slow action of natural processes on crustal structures. Each of these methods may be further divided into two styles, according as—often as if by accident — an unsystematic arrangement, or—more consciously—a well chosen, systematic arrangement is followed. Further, all regional descriptions may be classed under two motives, one geomorphic, in which land forms are studied for themselves, the other physiographic, in which they are studied as the stage on which plants, animals, and man play their parts. Articles of the physiographic motive test their success by showing that they lead to clearer understanding of the conditions and activities of the living elements of a landscape, and hence contribute more helpfully than geomorphic studies to a fully developed modern geographical treatment.

Illustrations.—One other element of method may be mentioned; namely illustrations, including maps, diagrams and pictures. Maps exhibit the areal relations in the simplest manner, and should always accompany a well prepared regional article; diagrams greatly aid explanation by the simplified graphic presentation of generalized features, which are sometimes of difficult understanding through words alone; careful sketches and well chosen photographs give truthful details, which fall into their proper place by aid of text, maps, and diagrams. Thus the treatment of land forms ranges from poorly illustrated, unsystematic, unrelated, empirical accounts, to well illustrated, systematic, related, explanatory descriptions. Progress in this division of geography may be measured by the degree to which studies of land forms depart from the first and approach the second standard.

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OCEANOGRAPHY

G. Littlehales

Ever since the ocean became the world-encompassing highway of communication, the superficial aspects of oceanography, embracing the movements of the surface waters in waves, tides, and currents, have been subjects of observation. With the advance of the physical sciences and the growth of knowledge concerning the extent of the ocean, came the realization that so large an expanse of a substance of the highest capacity for heat must, to a large extent, govern the temperature at the surface of the earth, and exercise a controlling influence as a factor in terrestrial physics. But centuries of voyaging did not extend marine observations beyond the delineation of the coasts and the needs of navigation; and, in the middle of the nineteenth century, the sea remained unfathomed; the observations of the biologist, the chemist, and the geologist did not extend beyond the shallow coastal waters.

By setting forth the principal deep-sea expeditions according to nations and states, through the names of the vessels engaged and the periods of their service, we shall serve the purpose of reflecting the progress of the systematic attempts that have been made to ascertain the physical and biological conditions of that vast region of the earth's surface occupied by the deeper waters of the ocean:

Austria:	
Pola	1891–1910
Belgium:	
Belgica	1897–9
Denmark:	
Ingolf	1895–6
France:	
Travailleur	1880–3
Talisman	
Caudan	1895
Français	1903–5

Germany:	
National	1889
Valdivia	1898–9
Gauss	1901–3
Planet	1906–10
Great Britain:	
Lightning	1868
Porcupine	1869–70
Challenger	1873–6
Investigator	1887–1902
Discovery	1901–4
Scotia	1902–4
Holland:	
William Barents	1878–84
Siboga	1899–1900
Italy:	
Washington	1881–2
Vettor Pisani	1882–5
Norway:	
Voringen	1876–8
Fram	1893–6
Gjoa	1903–5
Michael Sars	1900–1910
Russia:	
Vitiaz	1886–9
Sweden:	
Vega	1878–80
Antarctica	1901–3
United States:	
Fish Hawk	1880–3
Albatross	1883–1910
Blake	1876–97
Narragansett	1871–3
Tuscarora	1873–6
Nero	1900
Principality of Monaco:	
l'Hirondelle	1885–8
Princess Alice I	1891–7
Princess Alice II	1895–1910

The parties to the International Council for the Investigation of the Sea, representing the countries of Northern Europe and the British Isles, have under their control and direction a number of small vessels especially fitted for oceanographical investigations, and they are constantly employed in adding to the extensive information already collected in connection with the fishery and hydrographical investigations in the North Sea and adjacent parts of the ocean.

The private enterprise of yachtsmen has also been made to yield important services to oceanography. Don Carlos, King of Portugal, in the yacht *Amelia,* made important investigations from 1896 to the time of his death, applied chiefly to the fisheries in the waters of Portugal. M. Glandez, a citizen of France, has done methodical work of importance in the Gulf of Gascoyne, in his yacht *Andrée,* and Mr. R. Norris Wolfenden, of England, has made annual cruises for a number of years in the yachts *Walwin* and *Silver Belle,* resulting in interesting biological and physical results with reference to the European Atlantic.

These expeditions and many others of lesser import, voyaging for the most part in seas remote from the countries in which they were fitted out, have resulted in the accumulation of a great store of observations and results, out of which has grown the literature of oceanography by which we find set forth the climatology and dynamical meteorology of the ocean, the theories of the tides and waves and the observed facts concerning them, the depth of the ocean, the temperature, the composition and circulation of the oceanic waters, the nature and distribution of marine organisms at the surface and in the depths, and the origin and distribution of marine deposits over the floor of the ocean.

An epitome of the means and methods at present employed in the study of the ocean and of the principal results obtained in oceanography, has been recently published under the auspices of the Musée Océanographique of Monaco by Prof. J. Richard, director of that institution; and this is being periodically supplemented by a synthesis of oceanographical knowledge in the newly established *Internationale Revue der Gesamten Hydrobiologie und Hydrographie,* edited by R. Welterbeck with the coöperation of eminent investigators, and published by Dr. Werner Klinkhardt at Leipzig.

Oceanography has her fleets on the ocean gathering new facts of observation, and her laboratories and institutions of research established in many lands, and inquiry has passed from the description of what is found in the sea to an examination of the origin of animal and plant life, and to the causes of the movements and physical conditions found therein.

The most significant advance is the introduction of oceanography into the rôle of the exact sciences by bringing it within the domain of mathematics, and thus elevating it to the stage in which a few observations will serve for the prediction of those movements by which both its circulation and the distribution of living organisms within its waters are controlled.

Observations of the temperature,

salinity, and gas contents made as nearly as possible at the same instant at a series of points or stations, and along a network of lines distributed in the depths beneath a given area of the ocean, and repeated every three, six, nine, or twelve months, have afforded the means of making synoptic charts which disclose the existence of bends or undulations like the waves formed on the boundary surfaces between water-strata of different densities. It is the mathematical investigation of these varying physical states that forms the *Dynamical Oceanography* of Bjerknes and Sandstrom, now in course of publication by the Carnegie Institution of Washington. This work constitutes an advanced mathematico-physical treatise on the statics and the kinetics of the atmosphere and the ocean. Thus the pressure, density, temperature, and velocity at any point in these terrestrial fluids are considered from the point of view of modern thermodynamics.

The most significant works in biological oceanography consist in interpreting the connection between the form, shape, and mode of life of the organism and the special characteristics of the medium in which it lives, such as salinity, temperature, light, pressure, and motion; that is, in explaining biological conditions on a physical basis. An example of this is found in the investigations by Alfred G. Mayer, of the Tortugas Laboratory of the Carnegie Institution of Washington, entitled *Rhythmical Pulsation in Scyphomedusæ.* This publication describes the effects of the actions of sea water, sodium, magnesium, calcium, and potassium upon pulsation in jelly fishes, and the hearts of scapæ and of turtles. It is shown that if any strip of tissue capable of pulsation be cut into the shape of a closed circuit and then set into pulsation, it will maintain itself in movement for an indefinite period of time.

CARTOGRAPHY

CYRUS C. ADAMS

The maps here listed have been selected from a large number of official or authoritative maps nearly all published since Oct., 1909. All maps are in colors unless otherwise indicated.

The International Map Committee, meeting in London, Nov., 1909, adopted a uniform set of symbols and conventional signs and rules as to projections, colors, contours, lettering, etc., to be used by all nations that coöperate in producing the map of the world on a scale of 1: 1,000,000. Full text, *Geogr. Jour.*, Aug., 1910. The leading countries of South America have promised their coöperation on surveys for the sheets of this map relating to their own territory.

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United States. Government maps, fiscal year July, 1909, to June, 1910 —(*a*) The Geological Survey, issued 87 new topographic sheets, 12 new editions of old sheets, and 14 folios of the Geologic Atlas (including editions in 8vo.); (*b*) United States, 100 miles = 0.9 inch. By Henry Gannett, March, 1910; (*c*) Coast and Geodetic Survey: 102 charts, including Alaska 15, Hawaii 9, Philippines 22, and Porto Rico 1; (*d*) Hydrographic Office: 119 charts, including Pilot Charts; (*e*) General Land Office: maps of Washington State, Oregon, and Arizona, 1 inch = 12 miles, and Alaska, 1 inch = 60 miles; (*f*) Dept. of Agriculture: 38 soil maps and the daily Weather Map (Weather Bureau), which also issues monthly meteorological charts of the North and South Atlantic and Pacific oceans.

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Florida. Geologic and Topographic Map. 1: 1,000,000. U. S. Geol. Surv. and Fla. Geol. Surv., 2d Ann. Rep., 1909.

Maryland. (*a*) Map of, showing physiographic provinces (black); (*b*) Map showing limestones of. 1 inch = 3 miles. Md. Geol. Surv., vol. viii, Baltimore, 1909.

West Virginia. Map of, showing coal, gas, and limestone areas. 1: 443,520 (black). W. Va. Geol. Surv., Morgantown, 1910.

Canada. (*a*) Resource map of the

dominion of. 1: 12,000,000. Dept. of Interior, Ottawa, 1909; (*b*) Corrected map of Southampton Island, Hudson Bay. 1:2,154,240 (black). Capt. G. Comer. *Bull.*, Am. Geogr. Soc., vol. xlii, No. 2, 1910. [Corrections of coast line and soundings.]

South America.—Brazil. Mappa do sul do. 1:2,500,000. G. de A Moura. L. Friederichsen, Hamburg, 1909. [Best map of southern states of Brazil.]

Bolivia and Peru. The new boundary between, 1: 1,710,720. *Bull.*, Am. Geogr. Soc., vol. xlii, No. 6, 1910.

Chile. The Chilean Land Survey added (1909–10) four sheets to its maps of the Republic. 1: 1,500,000. Oficina de Mensura de Tierras, Santiago. [Conspicuous features: orography, hydrography, and many tables of geogr. and economic import.]

Peru. Mapa del departamento de Loreto. 1: 1,000,000 (three sheets). Col. P. Portillo. *Bol.*, Soc. Geog. de Lima, vol. xxiii, No. 4, Lima, 1908. [Notable for itinerary surveys of Madre de Dios, Ucayali, Purus, and other rivers.]

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Africa. Central and South, 1: 5,000,000. Bartholomew, Edinburgh, 1910. [Revision.]

Tropical Africa. Skeleton maps of, showing distribution of tsetse flies and sleeping sickness (two maps), 1: 7,500,000. Sleeping Sickness Bureau, London, 1910.

African Goldfields. (*a*) West African goldfields, 1 inch = 4 miles; (*b*) Map of Rhodesia, 1 inch = 12 miles; (*c*) Map of the Witwatersrand goldfields, 1 inch = 5,000 feet. A. G. Clevely, Ilford, Eng., 1909. [Very detailed.]

Algeria. Commercial Map of, 1: 200,000. (Seventeen sheets, in course of publication.) M. C. Jonnart, Gouverneur Général, Algiers, 1910. [Fine general map with details of economic conditions.]

British Africa. (*a*) British East Africa Protectorate: (1) Nairobi and the surrounding country, 1: 62,500; (2) Nairobi, 1: 125,000. War Office, London, 1910. [Detailed topographic maps by the new Surv. Dept.] (*b*) Cape of Good Hope, Geological Map of the, 1: 238,000. Sheets 32, 40, Cape Town, 1910. [Several sheets of this map are appearing every year.] (*c*) Gambia, 1: 500,000. Geogr. Sect., Gen. Staff, War Office, London, 1909; (*d*) Southern Nigeria, S. and E. provinces of, 1: 500,000. Capt. W. H. Beverly, Stanford, London, 1909. [Best general map of this region.] (*e*) Nyasaland Protectorate, 1: 1,000,000. Geogr. Sect., Gen. Staff, No. 2,136, London, 1909; (*f*) Sierra Leone, 1: 200,000. War Office, No. 1,764, London, 1909. [Sheets of this detailed survey that appeared in 1909.]

Belgian Congo. Congo Belge, 1: 4,000,000. A. de Boeck, Brussels, 1910. [The latest map summary of our knowledge of this colony.]

Cotton Maps. (*a*) Baumwollkarte von Deutsch-Ostafrika, 1: 7,000,000; (*b*) ditto Kamerun, 1: 6,000,000. Kolonialwirtschaftl. Kom., Berlin, 1910. [Examples of colonial economic maps.]

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French Colonies. (*a*) Dahomey, Carte du, 1: 500,000; (*b*) Carte de la Guinée Française, 1: 500,000; (*c*) Carte de la Côte d' Ivoire, 1: 500,000; (*d*) Carte de la Côte Française des Somalis, 1: 500,000; (*e*) Carte de l'Afrique occidentale Française. Serv. géogr. des Colonies, Paris, 1905–09. [These fine maps (one to six sheets each) are the authoritative maps of most of French Africa.] (*f*) L'Afrique Equatorial Française (formerly the French Congo), 1: 1,000,000. A. Challamel, Paris, 1910. [In five sheets of which three have appeared.]

German Colonies. (*a*) Cameroons, Kamerun, 1: 300,000. (Twenty sheets and six supp.) D. Reimer, Berlin. [First Sect. has just appeared.] (*b*) German Ostafrika, special map of, 1: 300,000. (Twenty-six sheets and six supp.) D. Reimer, Berlin, [Nearing completion.] (*c*) Deutsch-Südwestafrika, 1: 400,000. In Deutsch-Kol. Atlas, German Col. Soc., Berlin. [Revised annually.] (*d*) Togo, 1: 200,000. (Ten sheets.) D. Reimer, Berlin. [The first German colony to complete its detailed map.]

Lake Victoria. 1: 1,000,000. War Office, Geogr. Sect., Gen. Staff, London, 1910. [Coast line based upon plane table surveys controlled by triangulation.]

Asia.—Borneo. Oversichts Kaart van het eiland, 1:200,000. Topogr. Inrichting, Batavia, 1909. [Best map of the island.]

China. Topographic Map of a Part of Kiang-su Province, 1:20,000. (In Chinese.) Bureau of Land Surveys (Chinese) in S. China, Nanking, 1910. [About 100 sheets cover area of 3,120 square miles on both sides of the Yangtse. Terrain shown by contours. Large information. Not yet sold to the public. The purpose to cover China proper with this survey is announced.]

East Indies Archipelago. Oversichts Kaart van, 1:2,500,000. (Six sheets.) Topogr. Surv. of the Dutch East Indies, Batavia, 1909. [Best general map of the entire archipelago.]

Indo-China, 1:200,000. Geogr. Service, Hanoi. [In course of publication.]

Java. Topographische Kaart van, en Madoera, 1:100,000. Topogr. Surv., Batavia, 1909. [First sheet of the new survey of the Dutch East Indies which will number about 150 sheets.]

Tibet. Das Hochland von. Zur Uebersicht von Sven Hedins Reisen, 1894–1908, 1:3,700,000. *Pet. Mitt.*, vol. lvi, 2 Halbband, I. Heft, 1910. [Supersedes all maps of the larger part of Tibet.]

Europe.—France. (*a*) France au, 1:50,000. Service Géogr. de l'Armée, Paris. [The publication of this notable map is making steady progress. It was begun in 1906 to meet the needs of science and industry as well as of the army. Based on topographic resurveys begun in 1903.] (*b*) France en 47 feuilles, 1:200,000. Delegrave, Paris, 1909. [Example of excellent maps showing automobile routes that are multiplying in Europe.]

Great Britain. Quarter inch to mile map of Scotland, 1:253,440. Bartholomew, Edinburgh, 1910. [A model map now appearing.]

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Polar.—Arctic. (*a*) Wandkarte der Nordpolargebiete, 1:7,500,000. (Two sheets.) Reimer, Berlin, 1910. [The latest and most complete map of the Arctic area.] (*b*) Sketch map showing surveys of Danish N. E. Greenland Expedition, 1:8,000,000. *Geogr. Jour.*, vol. xxxv, No. 5, London, 1910. [Completes the outlining of the Greenland coasts.] (*c*) Sketch map of expedition of Comm. R. E. Peary, 1908–09, 1:25,000,000. With profile of soundings from C. Columbia to Pole. *Geogr. Jour.*, vol. xxxvi, No. 2, London, 1910.

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EXPLORATION AND DISCOVERY

Henry Gannett

The Roosevelt Expedition.—Col. Theodore Roosevelt returned to Europe in April, 1910, from British East Africa, where he spent nearly a year collecting zoölogical specimens for the National Museum and studying the geographical distribution of the animals of that region. His collection is remarkable in size and variety, and is far the finest ever obtained by a single expedition. The party, consisting of his son Kermit, Dr. Mearns and Mr. Heller, of the Smithsonian Institution, and Mr. Loring, left Mombasa for the interior in April, 1909. As a result the United States National Museum will possess the largest and most complete collection of African fauna in the world. Among the particularly rare specimens obtained by Mr. Roosevelt personally were a reticulated giraffe, five splendid specimens of the white rhino (only two and very poor ones had been previously brought into civilization), and three giant eland. These are the first specimens of eland obtained for any museum. Altogether the party brought back nearly 11,000 specimens, including 5,000 mammals, 4,000 birds, 2,000 reptiles, 500 fishes, and hundreds of botanical specimens. Next to the big game species, the series of birds is probably the most valuable.

African Game Trails, the book which Mr. Roosevelt has published as a result of the expedition, is a notable contribution to knowledge.

The North Pole.—Sept. 6, 1909, the world was electrified by a telegram from Robert E. Peary from Indian Harbor, Labrador, to the effect that on the preceding April 6th he had succeeded in reaching the North Pole. Thus the prize which had been sought for by explorers for centuries was captured at last by an American. On this expedition, his sixth attempt to reach the pole, Commander Peary left Sydney, N. S., July 17, 1908, on the *Roosevelt.* He proceeded northward to Etah, on the west coast of Greenland, where he obtained Eskimos, dogs, and walrus meat. Then he pushed on northward through the ice of Smith Sound to the north coast of Grant Land, where he laid up the ship and made winter quarters.

During the winter, moonlight nights were utilized in hunting, to obtain supplies of fresh meat, and in transporting provisions and other supplies to Cape Columbia, ninety miles to the westward, which had been decided on as the real starting point of the polar expedition. At this place were collected before the end of Feb. all the men, dogs, sledges, provisions, and other supplies required for the long journey over the sea ice.

The party started from the land on March 1st, as soon as there was light enough to travel. It consisted of six white men and one negro, nineteen Eskimos, 134 dogs, and nineteen sledges. It was organized into seven parties, each led by a member of the expedition with two or three Eskimos, an equal number of sledges, and eight dogs to each sledge. Six of these were supporting parties, whose functions were to transport provisions, to build trails, and in every way possible to aid the seventh party, the one led by Peary, toward its goal. As they journeyed north, one supporting party after another, having fulfilled its mission, left the main column and returned to the land, until finally, in latitude 87° 48′, the fifth supporting party, that commanded by Bartlett, the captain of the *Roosevelt,* returned. The sixth party, led by the negro, Henson, accompanied Commander Peary's own party to the pole. On Bartlett's departure there were left with Peary and Henson four Eskimos, five sledges, and forty dogs. The Eskimos, sledges, and dogs were the best of the whole outfit. Peary himself was in the best of physical fitness, and with ample store of provisions, the prospect of success was most excellent, and the event justified the most sanguine hopes. The 133 remaining miles were traversed in six long marches, and the pole was reached. Peary spent a day and a half there, observing for latitude, and then started back. His homeward journey was expedited by various causes. He followed the trail of his other returning parties, and thus was spared the labor and delay of cutting and building trails; he used the igloos built by them, and thus saved much time; the southward drift of the ice was now in his favor, and finally there was the consciousness in both man and dogs that they were going home—all these conspired to enable Peary to make double marches, doing two days' travel for one on the way up. He reached the land and his ship in safety, as did all of his party with one exception. Prof. Ross Marvin, of Cornell University, who was in charge of one of the supporting parties, fell into a lead and was drowned.

For his achievement in discovering the North Pole Peary has received the highest honors from all the great geographic societies of the world, and from many other scientific organizations.

The scientific work accomplished by Peary consisted, first, in the demonstration that there is no land at or near the pole, or in the neighborhood of his route thither; second, in obtaining a line of soundings from Cape Columbia to the pole; third, tidal observations at a number of points on the north coasts of Greenland and Grant Land.

The Northwest Passage.—Capt. J. C. Bernier, the Canadian Arctic explorer, in his steamer *Arctic*, has been occupied during the past two years in exploring the lands and islands bordering on Lancaster and Melville sounds, especially in Banks Land. Last July he started north again, this time with the intention of attempting the Northwest passage by a more northern route than that taken by Amundsen. He expects to complete the voyage in 1911, spending the present winter at Winter Harbor, on Melville Island.

Amundsen's Expedition.—Capt. Amundsen left Norway in June, 1910, on the *Fram* with the intention of going around Cape Horn and through the Pacific and Bering straits into the Arctic. There he plans to be hemmed in by the ice and to drift, if possible, across the North Pole, thus repeating Nansen's experiment. He does not expect to enter the Arctic Ocean until the summer of 1911. He is provisioned for seven years.

Antarctic Exploration.—Capt. R. L. Scott, R.N., started in June, 1910, for a second expedition to explore the Antarctic Continent. His ship, the *Terra Nova*, left Littleton, New Zealand, at the end of Nov., intending to make a landing on the shore of MacMurdo Sound. The purpose is to take up the exploration of the interior of the Antarctic Continent where his former expedition and Shackleton's expedition left off, and to carry the work forward as far as means permit. For transportation on land Siberian ponies will be used, as was done in his former expedition and also in Shackleton's. These two expeditions are the only ones which have yielded important information concerning the interior of the Antarctic Continent.

Scott's explorations showed that the great ice barrier is in reality the front of an enormous ice field or glacier, mainly floating on the surface of a great bay or sea, and fed by glaciers coming down from elevated land on the west and probably upon the east side also. Scott traveled southward up the western margin of this ice field four hundred miles. He also climbed from his headquarters on MacMurdo Sound, to the summit of the high table land to the westward.

Shackleton traveled up the western border of the ice field until he reached a great glacier coming down from the high lands to the westward. He followed up this glacier to the summit of the plateau, and then kept on southward until he reached a point only ninety-three miles from the South Pole, when he was obliged by scarcity of provisions to return. At the point where he turned back he was at an altitude of 10,000 feet above the sea. During his absence on this southward journey another party of the expedition reached the South Magnetic Pole, and a third party climbed Mt. Erebus.

Charcot's Expedition.—In Feb. Dr. Jean Charcot, in the steamer *Pourquoi Pas*, arrived at Punta Arena, Chile, after two seasons spent in exploring the shores of the Antarctic. During the first season he completed a map of Adelaide Island, eighty-one miles long, and south of it discovered a great gulf. The coast was surveyed for 120 miles as far as Alexander I Land. The expedition returned north and wintered at Peterman Island. During the second season he discovered new lands west and south of Alexander I Land, and steamed as far west as longitude 126° between the parallels of 69° and 71°.

Asia.—In western China Count Charles de Polignac, with two companions, has been engaged during 1909 and 1910 in exploring certain rivers, branches of the Yang Tse, with respect to their navigability.

Africa.—M. H. Hubert returned to France in Aug., 1910, having completed a geographical and geological exploration of more than ten degrees square, about 400,000 square miles, in French West Africa.

M. August Chevalier is at present

engaged in the exploration of Dahomey. The lower and middle parts of this region he has completed and is now at work in upper Dahomey.

The Sudan.—For several years the Egyptian Government has been engaged in preparing a reconnaissance map of the Sudan, and at present nearly all the inhabited part has been mapped on scales of 1:250,000 or 1:1,000,000.

In 1908 Capt. Cortier commenced an exploration of a part of southwestern Sudan. His expedition was under the auspices of the French Ministry of the Colonies, the Société de Geographie of Paris, and the government of French West Africa. This work was brought to an end and Capt. Cortier returned to France about the middle of the year. This expedition was eminently successful, having mapped and made geological studies of an area 650 by 300 miles in extent, lying mainly between latitudes 15° 30′ and 20° north, and longitudes 0° and 10° east. Positions were fixed by astronomical observations and by triangulation.

Belgian Congo.—During the year there has been published in London an account by E. Torday of his explorations during the previous two years in the Kasai country of Belgian Congo. Here he found cannibals living undisturbed. The region explored is about the size of New York and Pennsylvania combined, but is so cut up by rivers and impenetrable forests that there are at least a dozen entirely dissimilar tribes in the territory, varying from the Bankutu cannibals to the Batetela, who, Mr. Torday declares, are the most progressive negroes in Africa.

Spitzbergen.—For several years an exploration of the Spitzbergen Archipelago has been in progress. This was financed originally by the Prince of Monaco, and latterly by the government of Norway. Besides preparing a topographic map, a geological survey is being made.

Canada.—During Aug. and Sept., 1910, Prof. Raymond McFarland, of Middlebury College, with several assistants, made an important expedition to the unexplored region about little Lake Mistassini and Lake Temiscamie. The party was well equipped and obtained considerable new information about the geographic features of this region.

Alaska.—D. C. Witherspoon, C. E. Giffin, and F. H. Moffit explored an area of about 4,000 square miles lying adjacent to and south of the central part of the Alaska range, and between the Gulkana River on the east and the Susitna River on the west. Work was begun at Paxton on the Fairbank's trail about July 1st and carried westward to Valdez Creek.

The expedition was organized as three parties, and geologic and topographic reconnaissance surveys were made on a scale of 1:250,000. This expedition worked northward to the crest line of the range, while another party, under the leadership of J. W. Bagley and S. R. Capps, explored the region lying north of the crest line. This second expedition made a geologic and topographic reconnaissance map (scale 1:250,000) of an area of about 2,000 square miles, bounded on the south by the Alaska range, on the east by the Delta, and on the west by the Nenana River, and north by the Tanana flats.

A. G. Maddren and C. G. Anderson carried a geologic and topographic exploratory survey (scale 1:250,000) southwestward from Ruby Creek, on the Yukon, to Haiditarod, in the Innoko basin, including a large part of the drainage of the Innoko River.

P. S. Smith and H. M. Eakin made a geologic and topographic reconnaissance survey of the region lying between the middle Koyukuk and the middle Kobuk, including the valley of Pah River. The original plan of carrying the survey to the southwest could not be carried out because of the failure of the delivery of supplies for the party on the Kobuk, as contracted for.

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XXIV. CHEMISTRY AND PHYSICS

CHEMISTRY

INORGANIC AND PHYSICAL CHEMISTRY

Arthur Wesley Browne

The great activity of investigators in the fields of inorganic and physical chemistry is shown by the fact that during the year ending Sept. 1, 1910, in the neighborhood of two thousand articles descriptive of experimental researches in these fields have been published in the scientific journals. It is obviously impossible to enumerate even the titles of these investigations or to attempt the presentation, in non-technical language, of any systematic résumé of the work, or any adequate account of its bearing upon past, present, or future science. Attention is here briefly called to a few of the many advances made during the past year, selected almost at random from the mass of material worthy of comment.

Water, the most familiar of all substances, when studied under unusual conditions of temperature and pressure, behaves in a surprising manner. By using the novel method of subjecting water to a pressure of 3,000 kilograms per square centimeter, and then cooling it, first with solid carbon dioxide, and finally with liquid air, Tammann has succeeded in preparing a new variety of ice, heavier than liquid water. As its temperature rises, this ice swells and breaks up into a white, powdered mass of ordinary ice occupying from four to eight times the bulk of the original sample. One interesting conclusion of the research is that water in freezing cannot exert a pressure greater than 2,500 atmospheres, since at this pressure "ice III," as the new variety is termed, is stable. A vessel capable of withstanding this pressure will therefore not be burst by the freezing of water.

Hydrogen Peroxide and Ozone.—It has been shown by G. W. Shearer that when certain metals, such as aluminum, zinc, and magnesium, are immersed in water containing dissolved oxygen, appreciable amounts of hydrogen peroxide are formed. Another new and interesting method by which the formation of small quantities of this substance has been effected consists in passing an electric current through a strong solution of potassium hydroxide in water at the temperature of -40° C. By this method Riesenfeld and Reinhold have succeeded in obtaining hydrogen peroxide at the *positive* electrode, by what may be regarded as an oxidation process, whereas the electrolytic formation of the substance has taken place hitherto at the *negative* electrode by a process of reduction. After water has been exposed for two hours to the influence of ultraviolet light, in the presence of air, it is found to contain hydrogen peroxide, formed without doubt by the action of ozone upon the water. Such liquids as olive oil and kerosene, which are capable of dissolving ozone, are found after similar exposure to contain this substance in solution. E. van Aubel, who performed these experiments, considers that the formation of ozone in the neighborhood of a quartz mercury lamp is now well established. Manchot has demonstrated the presence of ozone in flames, finding it possible to detect the substance in any hot flame such as the oxyhydrogen or even the ordinary gas blast flame. Haber and Hodsman, by using a silver capillary tube, succeeded in detecting ozone in very hot flames, including the oxygen carbon monoxide flame.

Action of Ultraviolet Rays Upon Gases.—The chemical action of ultraviolet rays upon certain mixtures of gases has been studied by several investigators. For example, Berthelot and Gaudechon have found that when a mixture of ammonia and oxygen is exposed to the rays, nitrogen and water are formed; and that cyanogen and oxygen under similar treatment combine quantitatively, yielding carbon dioxide and nitrogen. It is suggested that if, during the passage of the earth through a comet's tail, any appreciable amount of cyanogen should be introduced into the atmosphere, this poisonous substance would be quickly oxidized by atmospheric oxygen under the influence of the intense ultraviolet rays of the upper air, and would be replaced by carbon dioxide and nitrogen, two normal constituents of the atmosphere. Coehn and Becker have investigated quantitatively the effect of ultraviolet light upon the formation of sulphur trioxide from sulphur dioxide and oxygen. When a gas mixture containing a ninefold excess of oxygen was passed through the quartz apparatus at the rate of 100 to 150 c.c. a minute, and at the temperature of 450° C., a yield of over ninety per cent of sulphur trioxide was obtained. It is suggested by the authors that the facts disclosed by this investigation might serve as the basis for a technical photochemical process for the manufacture of sulphuric acid.

Solubility Determinations. — The solubility of a large number of substances, including both gases and solids, in water and in other solvents, has been determined by various investigators during the past year. Findlay and Creighton, for example, have studied the influence of colloids and fine suspensions upon the solubility of carbon dioxide and nitrous oxide in water, with the ultimate object of throwing light upon the absorption of gases by the blood. Sieverts and his coworkers have investigated the solubility of gases in metals and alloys. They find that copper absorbs sulphur dioxide; that copper, nickel, and iron absorb hydrogen in quantities varying inversely with the temperature, and that silver dissolves oxygen in amounts closely proportional to the square root of the gas pressure.

Nonaqueous Solvents.—Within recent years considerable attention has been given by inorganic and physical chemists to the study of solvents other than water. The epoch-making researches of E. C. Franklin and his associates, for example, have shown not only that liquid ammonia deserves to share with water the distinction of being an almost universal solvent, but that chemical reactions taking place between substances dissolved in liquid ammonia are in many cases closely analogous with reactions between corresponding substances dissolved in water. As a further illustration from this field of investigation may be cited the work published during the past year by Röhler, who has studied the properties of formamide as a solvent for inorganic salts, and who has electrolyzed numerous solutions of salts dissolved in this substance. In continuation of his own earlier researches upon the reactions occurring in acetone and in pyridine solutions, A. Naumann has within the year investigated the reactions in methyl acetate and in ethyl acetate solutions. In methyl acetate, for example, he has found that an insoluble salt may be precipitated, just as in aqueous solutions, by the interaction of two soluble salts.

Direct Synthesis of Ammonia.—One of the very important advances of the year has been the development by Haber and Le Rossignol of a practical method for the preparation of ammonia by the direct union of nitrogen and hydrogen. When a mixture of these gases is subjected to a pressure of about 200 atmospheres at a temperature in the neighborhood of 500° C., and in the presence of a suitable contact material, such as osmium or uranium, ammonia is continuously produced. The great advantage possessed by this process over other methods for the chemical fixation of nitrogen lies in the fact that it involves the expenditure of comparatively little energy, and may be used even in localities where cheap water power is not available, provided that coal for use in the generation of hydrogen may be obtained.

Carbon Monosulphide.—The importance to chemical research of the recognition and study of analogies is well attested by the work of Franklin, to which reference is made in a preceding paragraph. Since ammonia and water are, respectively, compounds of hydrogen with nitrogen and oxygen, two elements that occupy neighboring positions in Mendeléeff's periodic classification, it is only natural to expect that these compounds should be closely related in many of their properties and reactions. Inorganic chemists have for many years used the analogies of this sort that are brought to light in the periodic system as a guide in their investigations. A preliminary account just published by Dewar and Jones of their researches upon the compounds of carbon with sulphur furnishes additional justification of this procedure. It has long been suspected that carbon should form two compounds with sulphur, analogous with its two oxides. For over half a century, however, the search for gaseous carbon monosulphide has been fruitless, although solid substances with the desired empirical composition have been obtained. Dewar and Jones have subjected the vapor of carbon bisulphide to the action of the silent electric discharge, with the result that free sulphur is formed, together with a gaseous substance that condenses at the temperature of liquid air and that polymerizes with explosive violence, at a slightly higher temperature, to a brown solid. This explosive gas is considered by the investigators to be either the long-sought carbon monosulphide, or some other new volatile sulphide of carbon.

Carbon subnitride, another interesting new compound of carbon, has been prepared by Moureu and Bongrand by withdrawing two molecules of water from butine diamide. This compound has the formula C_4N_2, and consists of fine, white needles which melt at 21° C. In its odor, and in the violently irritating properties of its vapor, which takes fire in air at 130° C., it resembles cyanogen.

Bone and Coward have demonstrated the possibility of forming methane by direct union of carbon and hydrogen. At a temperature of 1,100°–1,200° C. they obtain from pure carbon over ninety-five per cent of the methane theoretically obtainable.

Among the important advances in the chemistry of inorganic nitrogen compounds during the past year are the preparation of a new compound of nitrogen and sulphur by Burt; the preparation by Ebler and Krause of zinc hydrazide $ZnN.NH_2$, the first metallic derivative of hydrazine ever prepared; and the investigation by Dimroth and Fester of the interaction of hydronitric acid, HN_3, with acetylene and with hydrocyanic acid, which yields triazole, $C_2N_3H_3$, and tetrazole, CN_4H_2, respectively.

The work of Eder and Valenta, who have studied the arc spectra of the new elements lutecium and neo-ytterbium, calls to mind the discovery of these elements in 1907 by Urbain, who succeeded in obtaining them by decomposition of the supposedly elementary substance ytterbium. Auer von Welsbach, who recognized the probable complexity of ytterbium as early as 1905, gave the names casseopeium and aldebaranium to the new elements. Each of these investigators has published during the past year a statement of his claims to priority in the work.

Tellurium.—In 1869, Mendeléeff, in announcing the periodic law, stated that the atomic weight of tellurium should have a value between 123 and 126, although the generally accepted value at that time was 128. During the last forty years the atomic weight of the element has frequently been determined, in the hope of explaining the abnormally high value by showing the presence in the supposedly pure tellurium of a new element possessing a higher atomic weight. The results of these investigations have been almost entirely negative, and have pointed toward 127.5 as the most probable value for the atomic weight of tellurium. It is with great satisfaction, then, that chemists have learned within the last few months, of the work of Browning and Flint, who have apparently succeeded at last in solving the problem. In a preliminary article these investigators have given an account of their method, which consists essentially in the decomposition of tellurium tetrachloride by the action of water. Examination of the more easily decomposed portion led to the discovery that the tellurium contained in this fraction possessed a lower atomic weight than that contained in the less easily decomposed portion. The work has been continued by Flint who, in an article published in the Sept. *American Journal of Science*, makes the final statement that "the figure 124.3 is apparently the nearest approach which has yet been made to the true atomic weight of tellurium." No final conclusion has yet been drawn concerning the nature of the substance of higher atomic weight present in ordinarily pure tellurium.

Helium. — Entirely different from the process of resolving by chemical means a substance like ytterbium, previously supposed to be elementary in character, into two new elements, is the process of spontaneous atomic disintegration by which the element helium is produced from the element radium. This remarkable phenomenon, predicted by Rutherford and Soddy in 1902 and discovered by Ramsay and Soddy in 1903, is the first instance of the production of one chemical element from another. Several different investigators have succeeded in corroborating Ramsay's experiments, the importance of which can scarcely be overestimated. It may not be too much to say that when the wonderful possibilities for future achievement opened up by this work are fully realized, the discovery will be regarded as one of the very greatest made in the field of chemistry up to the present time.

Radioactive Elements.—Much of the progress made during the past year in the study of radioactive substances pertains to the domain of physics rather than that of chemistry. Among the advances of great interest to chemists may be cited the work of Rutherford and Boltwood, who have found that a radium preparation containing about 200 mg. of the element yielded in 83 days an amount of helium corresponding with 163 cu. mm. per gram of radium per year. This amount closely approximates the value calculated by Rutherford and Geiger from their results obtained by counting the alpha particles. Dewar obtained results of the same order of magnitude. Gray and Ramsay have corrected their previous estimate concerning the "half-life period" of radium, stating that "one gram of radium will have been reduced to 0.5 gram after 1,744 years." The approximate atomic weight of radium emanation has been determined by Debierne, who measured the rate of flow of the gas through a small aperture in a thin sheet of platinum. On the assumption that the gas is mon-atomic, the atomic weight is found to be about 220. This result is in fair accord with the theory that one atom of emanation is formed by the expulsion of one alpha particle, or charged helium atom, from each atom of radium as it undergoes disintegration. Ramsay and Gray have determined the density of radium emanation, using a quartz balance sensitive to one half-millionth of a milligram, and obtaining 220 as the mean value for the molecular weight of the emanation. These investigators classify this element with the elements of the argon group, and suggest that it be named *Niton.* Usher has found that when radium emanation is brought into contact with ammonia, each atom of emanation may decompose as many as 134,300 molecules of ammonia, but that only one per cent of its liberated energy is consumed in the operation. Ramsay and Usher have made the startling announcement that when salts of certain elements of the carbon group were treated in solution with radium emanation, an oxide of carbon was invariably formed. Since Mme. Curie has been unable to duplicate Ramsay's earlier experiments upon the production of lithium from copper, however, it will be well to suspend judgment upon this later work until it has been either corroborated or disproven by further experiments. Mme. Curie and A. Debierne have succeeded in obtaining 2 mg. of a preparation containing no radioactive element but polonium. This preparation contained about 0.1 mg. of polonium, the amount obtainable from two tons of good pitchblende. Photographs of the spark spectra of polonium were obtained, and the production from this element of helium and of minute amounts of emanation was observed. Mme. Curie and A. Debierne have also achieved the isolation of metallic radium. This remarkable feat was accomplished by electrolyzing a solution of pure radium chloride. The radium was obtained at the mercury cathode, at first in the form of a radium amalgam, from which the mercury was subsequently distilled in a current of hydrogen. The residue, which was in all probability pure metallic radium, was of a brilliant white luster, and was found to decompose water vigorously, to blacken rapidly in air, and to melt at 700° C.

An interesting series of researches has been carried on at the University of Berlin by F. Fischer and his coworkers upon the properties of pure argon and pure nitrogen. In the attempt to cause argon to combine with the metals, the investigators caused an electric arc to pass between metal electrodes in liquid argon. Although no argon compound was obtained with any of the forty-five metals tried, certain of the metals, including lithium, sodium, potassium, cesium, rubidium, zinc, and cadmium were obtained in a new form. When a liquid mixture of argon and nitrogen containing ten per cent of nitrogen was used, many of the metals combined directly with nitrogen to form nitrides, the majority of which had never before been obtained.

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ORGANIC CHEMISTRY

J. M. NELSON

One of the most interesting contributions to our knowledge of organic chemistry within the last year has been the preparation of an optically active compound (that is, a compound capable of rotating the plane of polarized light) containing no asymmetric carbon atom. Van't Hoff, by means of his conception of the tetrahedral carbon, predicted the possibility of optical activity in the case of compounds containing the Allene structure $\begin{smallmatrix}R_1\\R_2\end{smallmatrix}\!\!>C=C=C<\!\!\begin{smallmatrix}R_3\\R_4\end{smallmatrix}$. Since then considerable work has been done with the hope of confirming or disproving this prediction. Up to within the last two years, this has met with little success. Perkin, Pope, and Wallach[1] have now succeeded in the preparation of the compound 1-methyl-*cyclo*-hexylidene-4-acetic acid. This substance possesses no asymmetric carbon atom, but is optically active. Although this compound does not exactly conform to the Allene type structure as given above, it has in place of one of the double linkings between two carbon atoms, a carbon ring, which amounts, in a stereochemical way, to the same thing.

Since the time of Kekulé, about 1860, the organic chemist has been considering carbon as invariably tetravalent. But within the last few years cases have been met with which indicate that this might not always be so, and that carbon shows varying valence, like so many of the other elements. Some of the more notable workers in this line of chemical research are Nef[2] and Gomberg.[3] The former attempts to show that carbon often behaves as if it were divalent, while the latter has pointed out that carbon is very likely trivalent in compounds like triphenylmethyl. Still this idea has never been generally accepted until in the last year, when Slenck, Weickel, and Herzenstein[4] have succeeded in synthesizing the compound tribiphenylmethyl, a compound very similar to Gomberg's triphenylmethyl. It has the advantage over the latter compound in that it can be isolated in the pure condition and its chemical nature definitely shown to contain a trivalent carbon atom.

Synthetic Rubber.—Since the advent of the automobile, the supply of rubber has become a very serious problem. The solution of this seems to have fallen to the lot of the synthetical chemist. Although many chemists have claimed success in the formation of artificial rubber, many of these products that have met with any commercial success have been more in the line of imitation rubbers. Some, however, claim to have effected the synthesis of actual rubber, usually by the polymerization (union of several molecules) by various means of a substance called isoprene. Probably the most successful along this line has been Prof. C. Harries.[5] Prof. Harries noticed the solvent effect of acetic acid on rubber, which indicated a breaking down of this complex substance into simpler products. Since most chemical reactions are reversible if the conditions under which they are taking place are sufficiently altered, he set about ascertaining the right conditions through which the acetic acid would cause these simpler products from rubber to reunite, again forming rubber. Isoprene being one of the main decomposition products of rubber, he heated this with acetic acid in a closed vessel at somewhat above 100° C. and obtained a product that answers all the chemical tests for para rubber, and concluded that it is identical with the latter. Isoprene at present commands a price which makes this source of rubber impracticable commercially. For this reason Prof. Harries is now engaged with the idea of finding some less expensive substance which has a chemical nature very similar to isoprene that might undergo a similar change into a product that, although not absolutely the same as para rubber, might be so closely related chemically to rubber that for practical purposes it might be considered the same.

Sugars.—So many of the sugars have the same percentage composition or empirical formula, that it has become necessary to evolve some other method whereby they can be distinguished one from the other. This has been found in the study of the spacial arrangement of the atoms (stereochemical configuration). The ingenious work of Emil Fischer and his students along this line has met with such particular success that the subject of sugars has been brought up from an almost chaotic state to be one of the most minutely organized in the field of organic chemistry. Within the past year C. S. Hudson[6] has shown in an interesting way by another method how the stereoconfiguration of many of the monosaccharide sugars may be determined. By assuming that the lactone bridge, in the case of monobasic sugar acids, always involves the γ-carbon atom, he has put forth the following hypothesis: "Lactones of dextro-rotation have the lactonic ring on one side of the structure, lactones of levo-rotation have it on the other, and the position of the OH group on the γ-carbon atom." He has tested this in case of the lactones of twenty-four sugar acids, whose structure and rotation had previously been determined and found to hold in each case. Thus it becomes possible, by means of the cyanide synthesis of the aldose sugars and having each carbon atom occur in turn as the γ-carbon, to determine the stereoconfiguration of the simple sugars.

Our knowledge of the aldo-hexose sugars is more advanced than that of the keto-hexoses, and, moreover, comparatively few keto-hexoses seem to exist. For this reason the proof by Spoehr[7] that the two sugars *d*-glutose and *d*-galtose are keto-hexoses with the carbonyl group on the third carbon, as previously predicted by Nef, is exceedingly interesting.

Another important step in the chemistry of the sugars is the isolation of *d*-ribose, a five-carbon sugar from several nucleic acids by Levene and Jacobs.[8] This is the first time this sugar has been shown to exist in nature. The proof that it forms a component of the nucleic acids has also added materially to our knowledge of the constitution of the latter, which are so important in the study of the nucleins and the more complex nucleo-proteins. Levene and Jacobs have gone still further into this important line of biological chemistry in showing this carbohydrate to form the connecting link between the phosphoric acid and purine base. They have also pointed out that very likely the nucleic acids can be divided into two classes: First, simple nucleic acids or nucleotides, composed of phosphoric acid, carbohydrate, and the purine base; secondly, complex nucleic acids consisting of several simple nucleic acids joined together.

Enzymes.—Considerable activity has been manifested in the study of enzymes in recent years. Most of this work, however, has had to deal with enzyme action rather than a study of the chemical constitution of these important substances. Therefore the work of Serafino Dezani[9] on the chemical nature of pepsin is highly welcome. Dezani prepared some very active pepsin and found it contained 12.09 per cent of nitrogen. Of this nitrogen, 16.30 per cent was basic in character, viz., ammonia, 3.39 per cent; histidine, 4.46 per cent; arginine, 4 per cent; and lysine, 4.43 per cent. Tyrosine, leucine, and perhaps aspartic acid and glutamic acid also occurred among the hydrolytic products of the pepsin.

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INDUSTRIAL CHEMISTRY

Robert Kennedy Duncan

Considering the progress of industrial chemistry the world over, the current year has been marked by no discoveries of startling importance. Consistent and steady progress, however, has been made in the innovating processes of the past five years, as well as in the details of the traditional processes.

Cyanamide.—Concerning these innovation processes, reference should be made to the manufacture of cyanamide. Its introduction into this country was long delayed, apparently through the action of the corporations concerned in the manufacture of calcium carbide. The current year, however, has seen the final establishment of factories for its manufacture at Nashville, Tenn., and at Niagara

Falls. Other factories are in process of installation.

Calcium Nitrate.—Great progress has been made, as well, in the establishment of the manufacture of calcium nitrate by the Birkeland & Eyde process. The company concerned in its manufacture, after passing through serious difficulties, has finally combined for the purpose with the Badische u. Analine Soda Fabrik, which corporation, through an additional improvement, has, with the Birkeland & Eyde process, finally established its manufacture on a basis of practical and permanent value.

Silicon and Iron.—The large-scale manufacture of elemental silicon is an interesting innovation in the manufacturing processes of this country. The introduction of its manufacture is significant of the beginning of an appreciation and knowledge, on the part of American industrialists, of the possibilities that lie in scientific industrial practice. Still another indication of this sign of waking on the part of American commercialists is the introduction of manufacture on a large scale of what is, to all intents and purposes, absolutely pure iron.

Oil Dag.—Among the scientific industrialists that encircle Niagara Falls, the Atcheson Company is to be congratulated on the final establishment of its "Oil Dag," as a superior lubricant. "Oil Dag" consists of oil carrying, in what might be called a permanent suspension, colloidal particles of graphite.

Artificial Silk.—Another interesting innovation is the manufacture of artificial silk. A Belgian company, for example, reports 145 per cent profit, while a German company pays 40 per cent, an interesting and significant comment on the profit which lies in the intelligent application of modern science to manufacturing needs.

Denatured Alcohol.—The recent law permitting the use of tax-free, denatured alcohol has been responsible for the introduction of the manufacture of the product in this country, and its further manufacture under these circumstances may confidently be predicted.

Artificial Gems.—In any statement of the year's manufacturing innovations, there ought to be signalized the rapid progress made in the manufacture of artificial gems. The synthesis of the ruby by Verneuil, some seven years ago, has resulted in the enormous manufacture and sale of the so-called "reconstructed" rubies. The manufacture of the artificial ruby, in fact, has proceeded to such an extent that, cut in tabular form sometimes more than one inch in diameter, they pass through various jewelry establishments as veritable Oriental pink topazes.

The latest conquest in the manufacture of synthetic gems is that of the sapphire. Owing again to the work of Verneuil, sapphires are now made identical in every physical property with that of the natural stone, and while they are not yet broadcast in the market, they may be obtained specially manufactured in certain ateliers of Paris.

Cellulose Alcohol.—The conversion of cellulose into alcohol has been for years one of the most important and at the same time one of the most exasperating problems with which industrial chemistry has had to deal. It is stated that through a recent improvement of the Classen process there are now obtained over twenty gallons of 94% alcohol per ton of dry sawdust. There seems to be a general consensus of opinion that the gentlemen concerned in this process have successfully solved their difficulty and have, once and for all, established the manufacture of alcohol from dry vegetable refuse. In other words, cheap alcohol seems practically to have arrived. An interesting fact about the alcohol so produced by this process is its remarkable purity. It is free from every trace of methyl alcohol or fusel oil and contains but minute traces of furfurol and aldehyde. It appears that this company ought to be able to still further decrease the cost of its alcohol production, for it has apparently made no investigation into the most efficacious varieties of yeast for carrying on fermentation, and has taken no steps to utilize the potentially valuable wood waste which remains after the extraction.

Bakelite.—One of the most creditable pieces of work done by American industrial chemists during the last few years is the development by Dr. L. H. Baekeland of the material which he has called Bakelite. This material results from the condensation of phenol with formaldehyde. (See XXIX, *Chemical Engineering.*)

Camphor.—A review of the progress of the new industries should refer to one that has probably failed. The synthesis of camphor by Kommpa in 1903 resulted in the evolution of commercial processes for the manufacture of camphor from oil of turpentine. Several of these processes were entirely practical in their workings, and great hopes were built upon their ability to successfully compete with the natural camphor from Formosa and Japan. The course of events, however, has made it obvious that in this one instance, at least, synthetic chemistry must take a place behind agricultural science. The recent discovery by Campbell, Eaton, and others that the traditional method of extracting camphor from the trunks of fifty-year-old camphor trees was mistaken, has overturned not only the business of synthetic camphor, but, as well, the whole Japanese monopoly. It has been proven by world-wide investigation that the proper method of camphor culture lies in extracting the camphor from the harvested leaves, for it has been shown, not only that the leaves yield more camphor and oil of camphor than the wood, but that they may be regularly harvested without injury to the tree. Camphor groves are springing up everywhere along the tropical belt, and on the basis of the discoveries made no commercial process resting upon a substance such as oil of turpentine can hope to compete successfully with growers proceeding upon the results of recent knowledge. In addition to this, the strenuous attempts of the Japanese Government to create a camphor monopoly in the natural product are doomed to failure.

American Industrial Chemistry.—Turning to traditional processes, such as tanning, fermentation, glass, ceramics, metallurgy, etc., etc., space remains only to state that they have all of them made steady and consistent progress. In the initial issue of a work of this character, it ought to be pointed out that the one great, significant fact in connection with the advance of the traditional processes and, as well, in the evolution of new processes, lies in the very small part which American industrialists have played therein. The fact of the matter is that American industrial chemistry appears in a most unfavorable light when compared with the achievements of the industrial chemists of Germany, France, Italy, or even England. The causes for this regrettable fact are clear and definite. It is due, first and fundamentally, to the attitude of American industrialists themselves. Speaking in general terms and making certain notable exceptions, American manufacture is today in a condition of disgraceful inefficiency. I am using these words advisedly. The reason for this inefficiency in the past may be ascribed to the tariff, an abundance of raw material, a growing population, and the formation of "Trusts" to eliminate competition. It is also due in some measure to the chemical departments of the universities of the country where professors, having no knowledge of, or sympathy with applied chemistry, have turned their best students into the pursuit of pure science, and have shown but little judgment in filling the needs of corporations applying for chemists.

Industrial Fellowships.—One of the significant facts in connection with the recent awakening of American industry may be found in the initiation and evolution of a scheme of industrial fellowships at the University of Kansas, and in the subsequent coöperation with this scheme of the University of Pittsburg.[1] During the past three years more than a dozen important fellowships have been established at the University of Kansas by large eastern corporations for the solution of important industrial problems. The results have been gratifyingly successful. Since the fellowships have a tenure each of two years, certain of them have expired, but in

[1] The industrial fellowships here referred to were originated by Prof. Duncan, and have since been directed by him.

no one instance has there been a failure in the opinion of the corporation concerned. There may be already placed to the credit of this scheme of coöperation between industry and learning, improvements in the chemistry of laundering, a new method of drying alfalfa so as to conserve its diastatic content, the successful commercial extraction of pure casein out of buttermilk, the standardization and large-scale manufacture of salt-rising bread by means of the pure culture, and the creation of an extraordinarily resistant enamel for enamel-lined, steel tanks. The other fellowships at present in operation are making progress just as remarkable as those which have expired. The whole scheme rests for its success upon a sensible coöperation between the industries, with their inside knowledge of the art concerned, and their facilities for large-scale experimentation, together with the large laboratory, library, and consultive facilities of a great university and a systematized method for obtaining exclusive information. After an experience of three years and a half, it may be said that in no one instance has the slightest flaw been found in the entire validity of the scheme.

ELECTRO-CHEMISTRY

Charles F. Burgess

Definition.—The term electro-chemistry is commonly employed to designate that field which derives advantage from the fact that electrical energy may be employed in producing chemical change, and the fact that, conversely, chemical change may be utilized to produce electrical energy. It is a field of endeavor which holds remarkable promise for the future and in which the present rate of development is rapid.

Electro-chemistry deals not only with the chemical changes produced by electrolysis in the passage of current through a liquid conducting medium or electrolyte, but also with its effect on gaseous materials; and with a more indirect influence in which electrical energy is transformed into heat and this heat in turn used for chemical and metallurgical purposes. The electric furnace has been a most active agent during the past year in advancing the interests of electro-chemistry.

The Electric Furnace.—There has been in the past a common distrust that the electric furnace would ever become generally useful in the metallurgy of iron and steel; but the development during the past year has been such as to change this distrust into a reasonable hope. The electro-metallurgy of iron and steel is progressing along three paths: the direct production of metals from the ore; the use of the electric furnace as an adjunct to existing methods for the treatment of iron and steel; and the substitution of the electric furnace for steel working furnaces heated by combustion.

In a direct reduction of iron ores less progress has been made than in the other uses, although in California, where fuel is scarce, ore is abundant, electric power is cheap, and where pig iron is in demand, there exists a combination of circumstances which enables an electric furnace plant to have achieved successful operation.

Such success has been reported in the electrical treatment and refining of molten metals taken from other furnaces and so numerous are the reports of achievement in the production of high grade and special steels by the electric furnace, that the prediction is freely made of the approaching obsolescence of the crucible steel process.

Numerous electrical furnace steel plants have been installed and operated during the past year; the one which is perhaps attracting the most attention in this country is the fifteen-ton furnace being operated by the Illinois Steel Company at South Chicago.

The development of the electric furnace in the metallurgy of iron is attracting much interest, not only on account of its importance in this one field, but because success with this metal points to its usefulness in the production and treatment of other metals. An especially attractive application of the electric furnace appears to be in the production of zinc, to which problem much attention has been directed in the past year, but without notable results.

Pure Boron.—As an illustration of other uses of the electric furnace the notable achievement in the production of pure boron is significant. Dr. E. Weintraub in producing this element in a high degree of purity, has given to the world a new material and one for which already various uses have been found.

The direct union of the oxygen and nitrogen of the air is another duty which the electric furnace is being called upon to perform. Although work is being carried on in this country it does not appear that America is making the progress which is reported for some of the European plants, apparently on account of the greater cost of electrical energy here than abroad.

Electrolytic Chemicals.—The manufacture of chemicals by electrolytic methods has increased notably during the year, though this has been through the growth of existing plants rather than the introduction of new processes.

For the production of bleach and caustic by the decomposition of salt, Jasper Whiting has described his new mercury-cell process, recently installed at Rumford, Me.

The profound secrecy under which most processes are operated makes it difficult to estimate present progress. The maintenance of this secrecy, however, may be taken as an implication that new developments are taking place.

In the electrolytic refining and separation of metals recent progress has related to details rather than principles. Copper, nickel, gold, and silver are among the products of the electrolytic refining cells. While much has been written during the past year of electrolytically refined iron, the articles refer mainly to the the use of pure iron as a basis of alloys for investigation purposes. Iron can be refined electrolytically with comparative ease, but thus far electrolytic iron has not become a commercial product.

It is known that small quantities of certain materials added to metal plating and refining solutions may exert marked influences upon the purity and physical quality of the deposited metal. Such influence is frequently detrimental, but occasionally decidedly advantageous. The causes of such influence are subjects of speculation and a study of additional agents offers a promising field for research.

Iron Corrosion.—The corrosion of iron is one of the most important and most urgent problems with which the scientist and the engineer have to deal. The modern and now generally accepted theory that iron corrosion is largely an electro-chemical action seems to place the study of the problem particularly in the province of the electro-chemist. The work of Cushman and Gardner recently published summarizes modern thought on corrosion as an electro-chemical phenomenon. Another publication which has stimulated renewed interest in a certain phase of iron corrosion is a decision by Judge A. L. Sanborn of the United States Circuit Court, which deals with the electrolysis of underground structures by the action of electric earth currents.

Primary and storage batteries are important electro-chemical devices for converting chemical into electrical energy.

The well-known "dry" cell has come to be the standard form of primary cell, and has replaced largely the various types of wet cells in extensive use a few years ago. The chief development of the dry cell during the past year has been in its increasing use rather than in any marked improvement in construction.

Neither can radical change nor improvement be noted for storage batteries unless it may be the announcement of the final development of the new Edison storage battery which the public has been awaiting during the past ten years.

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SANITARY CHEMISTRY

Ellen H. Richards

The year has been remarkable, not for brilliant discoveries of new facts, and not so much for methods of using recently discovered facts as for a public acceptance of the value of sanitary work to the city and to the state, based upon a new recognition of the economic value of human life and especially of the value, to the community, of human health.

The effect of chemical action on and in living tissue, the intertwining of chemistry and biology, the close relation with "physiologic physics" as the French say, the recognition of the biochemical and biophysical problems meeting the sanitarian at every turn—all these tendencies have made a separation into departments more difficult, and now point to the broad term of *sanitation* as the inclusive designation.

Ventilation.—This tendency is seen in that most important sanitary function, ventilation. Carbondioxide is relegated to the background and temperature and humidity take the first place in investigation. The Curve of Comfort is plotted rather than the percentage of carbondioxide.

Another tendency is noted in connection with ventilation. The toxic effects of small quantities of carbon monoxide, of ferro-silicon gas, of hydrogen sulphide and of hydrocarbons are being studied. The irritation caused by dust which permits the lodgment of undesirable substances has come to a front rank in sanitary discussion.

It is chiefly physiological chemistry that interests the sanitary worker. In *Chemical Abstracts* over a thousand titles in nine months show the trend. In the self-purification of streams protozoa are now credited with a large share of the successful results.

In the four most important processes appearing in the current journals, sterilization by ultraviolet light, by hypochlorite solutions, by hydrogen peroxide, and by ozone, it is manifestly impossible to separate the chemical from the physical and biological effects. Neither process is new in the year but all have leaped into public attention in the past few months.

Ozone in its theory of application is, perhaps, the most nearly chemical; but its activity results in the death of the living cell and it is produced by physical means. Undoubtedly the practical production of ozone and its application to purification of air and of transparent fluids, as water, will be reckoned one of the achievements of 1910.

Hydrogen peroxide or "oxygenated water" has been more successfully used for turbid fluids, as beer and milk. Under the influence of a catalytic enzyme the peroxide is decomposed, setting free nascent oxygen, according to the Danish chemists. They claim a complete destruction of the tubercule bacillus.

Ultraviolet Light. — The practical application of the Finsen, the Uviol, and finally the quartz or Kromayer lamps for the transmission of ultraviolet light derived from mercury electrodes, to the sterilization of fluids, has progressed by slow stages since 1877. France and particularly the Pasteur Institute has been the focus of recent very successful experiment. A water sterilizer for hospital use has yielded 132 gallons of sterile water by means of one Cooper-Hewitt lamp, absorbing three ampères at 110 volts. The water is given a swirling motion so that all the microbes may come within the influence of the light on two occasions. Bactericidal action is said to decrease more rapidly than the square of the distance. A film of .5 to 2.0 cm. is used. Since the same effect is given in absence of oxygen as in air, the small quantity of hydrogen peroxide formed cannot have bactericidal action.

Urbain and Feige find that the wave lengths between 1,860 and 2,900 Angstrom units, using electrodes made of equal parts of carbon and aluminum, give the best results. The arc is placed ten cm. above a circular opening, and an illumination of one minute with an arc of two ampères sterilized Paris city water.

Sterilization.—While the cause of the sterilizing effect is the special vibration of light, the *agent* is generally held to be nascent oxygen. The process is destined to have wide application since it adds nothing deleterious to the fluids it sterilizes and it leaves the taste and mineral salts unchanged. There are some dissenting voices as to the production of nascent oxygen, and further study may change the present opinions. The rays are said to destroy toxins in solution; but milk holding much colloid matter in suspension is difficult to treat.

The use of hypochlorites for sterilization ranks as an application and not a discovery of recent years. The trials now making should go far to settle some mooted points. Whether the active agent is nascent oxygen or not, how far the process may be controlled so as not to leave the water harder than before or more acid than before, remains to be tested on a greater variety of waters and over a longer period. For many sewage problems the method promises effective results.

There remains only to mention the increasing use of chemical methods in medical research. A full training in chemical hygiene is now demanded for admittance to the best research laboratories where problems relating to public health are being studied as never before.

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PHYSICS

F. A. Saunders

During the past year there have appeared in the various journals devoted to Physics, not far from two thousand articles presenting the results of investigations in this branch of science. It is impossible in this short review to give a very satisfactory account of such a mass of work, but it is safe to say that no discoveries of the first importance to humanity, as the X-rays proved to be, will be credited to 1910. A few subjects of great scientific interest have, however, been considerably advanced, and, in this work, American men of science have had an unusually creditable share.

Relativity.—The theory of relativity is of comparatively recent origin, and has lately been the cause of much discussion.[1] It seeks to substitute new and strange foundations for mechanics and electrical theory, in place of familiar and, as we supposed, well-established principles. The necessity for some change has, it is true, been gradually becoming evident. The now classic experiment of Michelson and Morley indicates that the ether, which we have been supposing to occupy all space, is being dragged along by the earth in its motion around the sun. Other phenomena, such as astronomical aberration, demand the opposite conclusion. Wilson[2] (McGill University) has put forward a theory to explain this discrepancy, but, according to the first postulate of relativity, such an explanation is unnecessary, since no portion of the ether can ever be identified or fixed, and motion "relative to the ether" should be regarded as quite meaningless. Indeed, Campbell[3] believes that the whole conception of the ether is in our way and should be given up. The phenomena with which we have supposed the ether to be particularly concerned, must then be supposed to be brought about through the agency of attachments of an electrical nature, which are associated with the bodies concerned.

The second postulate of relativity states that the velocity of light is a constant, independent of any motion on the part of the source or of the observer. It follows from the two hypotheses that the dimensions of objects vary with their velocity, though this variation is sensible only when the motion is exceedingly rapid; and that time itself is not quite the "independent variable" we took it for, but also depends in its measured values upon our velocity. Mass, even, must in like manner be a variable quantity. These novel ideas are arousing much discussion, the final result of which cannot yet be safely predicted. Campbell shows that the foundations of mechanics are not so comfortably stable as we had supposed, and it may well be that the principles of relativity will furnish the first step toward their rebuilding. Comstock[4] (Mass. Institute of Technology) has contributed an account of some of the strange features of the theory, and Tolman[5] (of the same institute) has given a couple of proofs of the second postulate, based on what appear to be reasonable grounds.

Ions. Radioactivity.—The most important researches of the year furnish new information as to the nature of electricity, and its relation to matter. Two years ago Rutherford (formerly of McGill University, now of Manchester, Eng.) succeeded in observing effects due to a single charged alpha particle (atom of helium), by multiplying the effect produced by its charge many thousandfold, in a most ingenious manner. He was then enabled to calculate the charge it carries, with an accuracy beyond that formerly attained, and to furnish for the first time, some direct experimental evidence in favor of the atomic theory.

Very recently Millikan[6] (University of Chicago) has reported briefly upon a remarkable series of experiments, devised to determine some of these same quantities, which, on account of their simplicity, directness, and accuracy, will prove in some respects more valuable even than those of Rutherford. He succeeded in making the acquaintance, as it were, of individual gaseous ions, and in directly deducing many of their properties. By means of an atomizer, excessively fine drops of oil, or other nonvolatile liquid, were produced in a closed air-chamber between two horizontal metal plates. The apparatus was so arranged that one of these tiny drops could be viewed under a microscope, and its rate of fall through the still air between the plates carefully measured. The process of production of these drops usually leaves them electrically charged, and their rate of fall is therefore much affected by a vertical electric force. If the two plates be connected to the terminals of a high-tension battery, a strong field is produced, and a particle may be made to rise, if desired, against gravity, or to remain practically stationary in the field of view, merely by varying the strength of this field. Thus the career of one droplet may be followed for many hours at a time. If the gas is ionized, by rays from a radium salt, for instance, wandering ions will occasionally approach the drop under observation, and may become attached to it, if circumstances are favorable. If so, a sudden change in the rate of motion of the drop in the field will be observed, due to the alteration in the total charge it carries. A simple calculation enabled Millikan to obtain the amount, as well as the sign, of the charge on a captured ion, and also the total charge upon the little drop itself. He found in this way that all the charges ever observed upon the drops were "exact multiples of one definite elementary electrical charge; in other words, that an electrical charge, instead of being spread uniformly over a charged surface, has a definite granular structure, consisting, in fact, of an exact number of specks, or atoms of electricity, all precisely alike, peppered over the surface of the charged body." Drops carrying any amounts of electricity from one to one hundred and fifty of these elementary "specks" were studied, and the value of the little unit of electricity is settled to the hitherto unattainable accuracy of less than one per cent; the final value being $\frac{4.90}{10,000,000,000}$ electrostatic units. This number being fixed, other information as to the molecules, their number and size, readily follows. Ordinary ions in air, such as are formed by rays from radium, are found to carry as a rule exactly this charge, though a few may be met with which bear two or three units. Similar amounts of charge are known to be carried by the alpha and beta rays from radio-active substances (the alpha rays carry a double unit), and by the positive and negative particles which sometimes form streams in discharges of electricity through gases at reduced pressures. In the case of the negative (cathode and beta) rays, the unit "speck" may have a disembodied existence, independent of matter; so that we ought perhaps not to speak of the charge being "carried" at all. The "mass" of such "corpuscles" is now regarded as entirely electrical in origin; interesting speculations have arisen in consequence as to the possible electrical nature of matter in general.

Millikan has also obtained direct and convincing evidence of the kinetic energy possessed by these atmospheric ions by virtue of their rapid motion through the gas. The amount of this energy, as estimated from his data, turns out to be just what we should expect from the kinetic theory of gases.

Ions have received attention from others as well.[7] Eve[8] (McGill University) shows that the usual methods of measurement of the number of atmospheric ions in a cubic centimeter is seriously affected by the presence of dust and smoke, the observed values being on this account much too low.

The alpha particles, the positively charged ions discharged from radio-active materials, were proved last year, by Rutherford, and others, to be atoms of helium. The effects produced by them are still under investigation; the scattering of the rays;[9] their transmission through matter,[10] and the ionization produced by them[11] have all been studied this year. Kinoshita[12] (working with Rutherford) has developed a method of counting their number by their action upon a photographic plate.

The positive rays found in vacuum tube discharges, the Doppler effect, which gives information as to their nature and speed, and the presence of uncharged streams of matter have all been examined, the chief advances in these directions having been made in the laboratories of Europe.[13]

Several important theoretical articles from the pen of Sir J. J. Thomson,[14] have appeared this year. They deal with the theories of the motion of charged ions through a gas, the structure of electric fields, the theory of radiation, and rays of positive electricity. The action of electrical doublets is investigated and the theory is advanced that electric fields of force are made up in a discontinuous manner, just as Millikan has shown to be the case with the charges themselves.

The newer radio-active elements have been isolated and studied; the various sorts of radiations have each received close attention, and the life histories of the elements involved have been followed as far as possible.[15] It is reported that Mme. Curie has succeeded in preparing a minute quantity of the metal radium itself, and observing some of its chemical properties. The distribution of radio-active materials and by-products over the earth's surface, both above and below ground, has been further examined.[16] From the amount of radio-active products which can be obtained from various minerals, the age of these has been estimated; the last, and probably the best estimate, made by Strutt,[17] giving archæan rocks a minimum age of 700 million years. It seems to be established that an individual element in the process of breaking up and changing over to the next one lower down in the series, emits rays of only one kind. This view has recently led to the isolation of new radio-active elements and it is likely that the list of these, though very large, is far from complete.

Speaking of things so excessively

minute, mention should be made of an interesting research by Chamberlain[18] (Vassar College). He has repeated, with improvements and extensions, an experiment of Quincke's on surface tension. The presence of an exceedingly thin, and quite invisible film of silver, deposited on glass, is shown by its effect on the height to which water is drawn up by surface tension. Thus it is possible to estimate the thickness of silver which will prevent the glass and the water from coming into contact, a thickness which cannot be far from that of two or three molecules. He deduces the "radius of molecular attraction" to be about one seventeen millionth of an inch, a value in close agreement with results obtained by very different methods.

Matter Under Unusual Conditions.—The properties of matter under extreme and unusual conditions have received considerable attention during the past year. Bridgman[19] (Harvard University) has continued a valuable series of researches of this class, examining substances which are subjected to hitherto unattainable, or at least unmeasurable, pressures. He gives a brief account of the freezing of mercury under a pressure of over 10,000 atmospheres (eighty-two tons to the square inch). Under this pressure, its freezing point is raised from forty degrees below zero to as high as 21° C. (70° F.).

In the same class come the investigations at the temperature of liquid air.[20] The laboratories of Cornell University have been the scene of much valuable work in this direction. During the past year,[21] Molby has studied the optical properties of quartz, and certain organic substances, and Gibbs the fluorescence and absorption of canary glass at this low temperature.

A paper by Jeans[22] (formerly of Princeton University), on "the upper atmosphere," shows the theoretical necessity for the existence of an outer region in isothermal equilibrium, beginning at a considerable elevation, and mentions results showing that it does begin at a height of about ten kilometers (6.5 miles) where the temperature is below —50° C. He also takes up the variations in composition which would be exhibited by samples of air taken from various heights, and derives the somewhat unexpected result that the outermost layers of the atmosphere must consist of hydrogen and helium, two gases present only in very small proportions at the earth's surface. The application of these considerations to the atmospheres of other planets follows, and he explains the possible presence of water vapor on Mars, and the absence of any atmosphere from our moon.

Heat.—In measurements at high temperatures, the Director (A. L. Day) and staff of the Geophysical Laboratory at Washington are doing very valuable work. They have continued a careful study[23] of the nitrogen thermometer up to the melting point of palladium; and Sosman, White, and others, have published important papers[24] on thermoelements and their use in the measurement of high temperatures.

Light.—In the subject of light, Wood (Johns Hopkins University), and the men working with him, have continued their ingenious experiments on the optical properties of sodium vapor, with special attention this year to its absorption, resonance and "magnetic rotation" spectra;[25] from all of which considerable insight into the processes of radiation is being obtained. He has given also an account[26] of photographs taken of the moon by ultraviolet light, in which he shows, by comparison photographs of certain minerals, a possibility of identifying the substances composing portions of the moon's surface, on account of their different aspect under this light.

The near approach of Halley's comet this year aroused interest in the spectra of these bodies, and Fowler[27] has succeeded in imitating their light by discharges through highly exhausted vessels containing traces of vapors of carbon compounds, thus showing that such vapors are probably present in the comets themselves.

Two years ago Tikhoff observed, by a photographic method, that the velocity of light reaching us from certain variable stars, appeared to depend on the color, and concluded that "space" had a feeble dispersive power, perhaps due to the presence of stray matter floating about in it. This year Ives[28] has shown that the results obtained are probably due merely to differences in the photographic action of the different colors.

Sound.—The subject of sound offers comparatively little opportunity for important research, but valuable work has been done by Lloyd and Agnew, of the Bureau of Standards, on the effect of phases of harmonics upon the acoustic quality of a tone. This question is historically famous, and the discussion upon it, begun between König and Helmholtz, has continued for many years. The result of this last investigation, namely that the phases of the harmonics have no appreciable effect upon the quality of the tone, will probably be regarded as practically final.

Electricity.—A fundamental experiment has been devised and successfully carried out by Kuehne,[29] whereby he has succeeded in measuring the electrostatic effect produced upon a charged body by a varying magnetic field. This effect is required by Maxwell's theory but previous attempts to observe it have failed on account of experimental difficulties. The results are in complete agreement with the theory.

Numerous investigations have been carried out on the electric arc in its many forms. This year some attention [30] has been given to the arc under reduced pressure, particularly to the mercury arc; also to the high frequency arc,[31] which is useful in wireless telegraphy, on account of the possibility of "tuning" the receiving circuit to it, and so attaining a certain degree of privacy in the messages.

All the parts of "wireless" apparatus are being studied, and improved. A valuable paper is published by Eccles [32] on coherers; another has appeared on the same subject by Austin,[33] in which he shows that a properly adjusted electrolytic detector is more sensitive than any other form at present in use.

The X-rays, though now an old story, are giving physicists a good deal of trouble at present. It was thought until recently that they were pulses, or shocks, that spread out through the ether in somewhat the same manner as light, excepting that they were not periodic. Now, however, Thomson is disposed to regard them as sudden kinks in discrete tubes of force, which may travel, one at a time, along each single tube, but which cannot be continuous in space; while Bragg [34] (University of Leeds), ably argues in favor of the corpuscular theory of these rays; that is, that they are due to charged, or neutral particles projected at high speed from the radiant point in the X-ray tube.

Bureau of Standards.—This institution, established just ten years ago, has steadily grown in usefulness and in scientific importance. In all branches of physics, perhaps most of all in electricity, work of the first importance is being carried out by its staff. The refinement with which observations are now made at the bureau has led to several interesting discoveries. For instance, it was found that the mode of construction of standards of resistance had been, for many years, such as to render their values variable, due to effects produced by the moisture in the atmosphere. This very minute effect had escaped notice in the older laboratories of Europe. We owe to the bureau a magnificent piece of research (by Drs. Rosa and Dorsey) on the value of the ratio of the two systems of electric units. In the subject of light, special efforts have recently been made to unify the photometric units in use in various countries; and accurate measurements of wave-lengths are in progress. In heat, high temperature thermometry has been carried to a remarkable degree of precision; and in electricity, the exact measurement of capacities, inductions, resistances and electromotive forces, has been advanced both in accuracy and in convenience. Americans have reason to be proud of the work which this young institution has already accomplished, and to be confident of its value in the future.

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XXV. BIOLOGY, BOTANY, AND ZOÖLOGY

BIOLOGY

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Definitions. — Biology in its true sense consists of the sister sciences of botany and zoölogy, so that every biological investigation can be referred primarily to one or the other of these subjects. Nevertheless our knowledge of the living world has developed in such a way that it has become convenient to recognize a somewhat distinct department which deals with the principles of general scope and application throughout the whole range of living things; this is general biology.

Each of the specified biological sciences is concerned with the broad comparative study of its own particular materials, their anatomical resemblances and differences, their modes of development, their sequence in geologic time, their physiological processes, and their genetic or evolutionary relationships. General biology, on the other hand, is concerned with processes and principles *as such*, displayed by all organisms or by a restricted series of living forms. It is eclectic, utilizing any group of plants or animals that may serve for the solution of a particular problem of a general or special nature. As it is so general a subject, it cannot be expected that biology will advance with great rapidity, for its synthetic studies must to a large extent wait upon the special analytical investigations in its two basic divisions.

Evolution.—A general review of progress in the year 1910, must deal largely with studies on the problems of evolution, for these are the widest in their scope. It is true that advances have been made in practically every well-established division of the whole field of biology, notably in the analysis of the fundamental "vital" processes of the cell and of protoplasm as the physical basis of life; but researches dealing with inheritance and its physical basis far outnumber all others concerned with general biological topics. This fact is highly significant, for it shows how vital the problems of heredity are deemed to be at the present time. That this should be so is evident from the fundamental importance of inheritance in the process of evolution. But biological knowledge has developed in such a way as to bring together the workers in several originally unrelated spheres of activity for a combined attack upon the still unresolved phenomena of inheritance. Within the past ten years the students of experimental breeding, those dealing with organic characteristics by the precise methods of statistical analysis, and the investigators of the finer structure and detailed workings of the cell as the organic unit, have learned that they can no longer work apart with profit. They have joined forces, and through their mutually assisted efforts, they have explained much that was previously unintelligible or obscure. It is not because other evolutionary problems are of less importance or are more fully solved, that heredity is now so much to the fore; it is because the time is ripe for profitable work on this particular group of problems. And the results obtained are valuable not only in themselves but also through their service in clarifying other subsidiary parts of the evolutionary process. The present review therefore deals almost entirely with evolution, and primarily with progress in our knowledge of heredity, in so far as this has been due to American men of science.

The Cell and Cell Physiology.—For over half a century it has been a truism that the universal "building block" of the organic world is the cell, a mass of living matter or protoplasm inclosing a nucleus. The total effects of the activities of cells, grouped to form tissues and organs and organisms, were more readily described than the physiological processes of a single unit. Perhaps the greatest task of biology has been to analyze the activities of protoplasm, and to express them in terms of known physical and chemical laws. Loeb,[25] who has done so much through his own work and that of his numerous students, to make cell processes intelligible in such terms, especially as regards the stimulation of the egg to development, has added a brief paper on oxidation and its consequences. Howell [20] deals with the subject from the standpoint of the physiologist, who indeed has the best basis of attack; his paper demonstrates how complex is the chemical mechanism of the cell, involving the action of more or less obscure substances like ferments—activators, kinases, and hormones—which work in the cell and throughout the entire body. Macullum [28] has directed attention to another physical process, namely surface tension, as one which plays a far greater rôle in cell physiology than has been supposed. In these papers, representative of a large class, significant evidences appear that some progress is being made—slowly, it may be, but surely—toward the final goal, which is the ultimate analysis of vital phenomena into their elements. And nothing has yet come to light to alter the general belief of biologists that these elements will prove to be the processes of physics and chemistry.

Evolution.—American men of science have been well to the fore in advancing our knowledge of the all-inclusive process of evolution. In fact, there are probably more investigators in this land now at work upon this subject than in any other country, excepting perhaps England. It is matter of considerable significance that the results now accumulating through the efforts especially of American and English men of science are in the main conformatory of and supplementary to the scheme of evolution so thoroughly outlined by Darwin. So true is this that the best outline for the program of investigation and for the present review of progress is Darwin's simple statement of evolutionary method.

In the first place science must deal with the universal natural phenomenon of variation, and with its causes. The struggle for existence, consequent upon overmultiplication, comes next, although this is rarely a special subject for present-day investigation. The process of selection, its reality, and its results, form the next division of the subject. Lastly heredity demands analysis, both as to the way it proceeds in the ordinary succession of unchanging generations, and as to the manner by which new characteristics may be added in evolution. Within this last field, the heredity or determination of sex has come to be so important that more than a score of papers dealing with it have appeared during the past year.

Variation.—Although many aspects of variation are discussed in papers on other subjects, only two investigations deal with this topic primarily. Walter [56] has studied by statistical methods the variation of *Urosalpinx*, a marine shore snail, using extensive representative lots taken from several localities on the east coast and from one place in California where they have been recently introduced. It appears that the snails differ somewhat in different situations, that dense populations vary less than thinly scattered communities, and that those occurring in a new locality on the west coast are in some respects more variable than a sample taken from an eastern station. The author finds, however, that a time-factor brings about changes in the community characteristic during the year; his results, therefore, fall short in definiteness of Bumpus's demonstration, some years ago, that the snails of the genus *Littorina* had come to vary far more widely along the Atlantic Coast over which they had recently spread, than individuals taken from the original home of the species.

Another research in this field, by Harris,[17] is a close statistical study of variation and of the correlation of variations in the case of the bloodroot. His results have a high value in quantitive respects, and well illustrate the methods in this department of investigation.

Selection.—This is again a subject that is discussed more or less fully in several papers to be considered beyond. Two extremely important articles by Harris[18–19] prove the reality of the selective process in nature in the case of a plant, *Staphylea.* He compared the fruiting organs of wide series of individuals taken at different stages of maturity from flowering to the formation of complete seeds. From his exhaustive objective analysis it appears that during the time specified a distinct elimination occurs which bears most heavily upon individuals with certain characteristics. For example, the "selected" or maturing flowers have more ovules, they are more perfectly symmetrical in radial respects, and they are more uniformly double in form, producing even rows of ovules. How and why selection acts to bring about these results are questions of less immediate importance; the major fact of real qualitative selection stands unquestioned. It is fortunate that investigations upon natural selection have not been altogether done away with through the operation of modern tendencies in biological study to focus attention on heredity and its causes. The latter subject has a high but by no means exclusive importance in evolution.

Heredity in General.—Since the appearance of De Vries's *Mutation Theory,* now translated into English,[11] and the rediscovery of Mendel's papers on hybridization experiments with plants, practically every investigation of biological inheritance has been undertaken to test the applicability of Mendel's principles. Hundreds of papers, and not a few textbooks like that of Bateson, have been written on this subject, and the organisms under investigation range from the lowest to the highest—from protozoa to man. Primarily as the result of the observations of cytologists on the behavior of cells during division, and especially during the maturation divisions when the germ-cells prepare for their later union, present questions deal largely with the chromosomes as the physical basis for the inheritance of adult characters of all kinds, including the fundamental quality of sex.

Heredity and Mendel's Principles.—On the basis of his classic experiments, Gregor Mendel formulated two general laws, namely: The principles of Dominance and of Segregation. Briefly, these are as follows: When a cross is made from two related organisms which differ visibly in a given character, the offspring resemble one parent in this character, and this peculiarity is said to be *dominant* (D) over the contrasted recessive (R) quality which does not appear. This is another statement of what was earlier denoted "alternative" inheritance as distinguished from "blended" inheritance, where the offspring of two differing parents were intermediate. When now the hybrid organisms are bred *inter se,* some of their progeny prove to possess the dominant character only; others are hybrid like their parents, with the recessive character submerged by the dominant one, while still others are purely recessive in constitution and in their ability to transmit the R character only to their later offspring. By a singularly clear and prescient analysis, Mendel showed that the D and R characters entering into the first hybrids were segregated during the maturation of the germ-cells of the hybrids, so that these gametes became pure and "free from the taint of the cross." In symbolic form the germ cells of the original parent with the dominant character would be DD; those of the other parent would be RR. The hybrids would be DR in gametic constitution. When segregation was accomplished, their germ cells would carry either D or R, and therefore the result of a cross of like hybrids would be $D + R \times D + R = 1\,DD + 2\,DR + 1\,RR$. In actual experiments which have been made, the numerical relations of these three classes often follow expectation with striking exactness.

The year's work has yielded important confirmation of these principles, but not without qualification in nearly all cases. The clearest results have been obtained with plants. Shull[45] finds an almost typical case in *Lychnis*, where the purple flower color dominates over white in crosses, but he shows that the former is by no means a simple character, for it may split up so that hybrid offspring may have flowers of a diluted purple color. Again East[12] has shown that in cross-bred potatoes derived from plants of differing characters the results are Mendelian, with minor departures.

Davenport[5] has published an extensive monograph on fowls, in which he presents the results of crossing such types as the silkie, the high-crested Minorca, the game, the rumpless, Houdan crested, and others. The phenomena are on the whole Mendelian, but striking departures from the expected results are sometimes found. In other papers[6–7] he points out that such departures can be understood as the products of variability in the power or potency of the physical basis or "determiner" of the usually dominant character. Pearl and Surface[40–41] also discuss heredity in hybrid poultry, on the basis of their own experiments, and their results are in essential agreement with those of Davenport. Sturtevant[51] has investigated the inheritance of coat color in horses, discerning at least five "color factors" whose relations are Mendelian. G. C. and C. B. Davenport[9] have undertaken an extensive investigation of skin pigmentation in man and its transmission in inheritance, dealing with over 300 families of lighter or darker complexions, and with mixtures of the white and negro races. Their most interesting general conclusion is that the colors of negro and white skins do not blend in mixtures, but segregate, although imperfectly. This result accords with the findings, when the children of *blond* and *brunet* parents are systematically investigated.

Additional studies upon inheritance in plants, notably those of Shull,[46] Pearl and Surface,[42] East,[13] and Davis,[10] show that the principle of dominance does not always hold true, for hybrids may be at one point or another on the intermediate scale between the two parental extremes. But even in these cases some tendency to segregation may be discerned in so far as the offspring tend to group themselves about some only of the intermediate points, or toward the parental extremes.

Castle[3] discusses the results reported earlier by Miss McCracken, who held that the single-brooded and double-brooded (univoltin and bivoltin) characters manifested by silkworm moths did not behave as typical dominant and recessive qualities in the crosses. Castle, on the contrary, believes that they do. Papers of a somewhat more general nature have also been published by Spillman,[47–48] and by Gates.[15]

A monograph of surpassing interest is Tower's[55] report on experiments with beetles belonging to the genus *Leptinotarsa*, which includes the familiar potato bugs. He deals with crosses bred in different combination from three species, establishing as a first result that while sometimes clear Mendelian dominance and segregation occur, in other instances, where the conditions affecting the beetles during their earliest development are unusual, an ordinarily dominant character may fail to appear. Believing that "environment" had a larger influence upon the course of heredity than it had been accorded, Tower experimented "synthetically" with beetles placed in restricted areas where different forms might hybridize, under diverse natural conditions. Leaving aside the technical facts, the general conclusion is that differences in environment are potent factors for the production of specific forms. This does not mean that acquired characters are inherited, as Tower himself points out. His own words are as follows (*loc. cit.*, p. 306): "These results indicate that in the fertilization process the two somewhat unlike germinal substances that are being combined interact one upon the other in exactly the same way that two nonliving substances would; that is, the products of the interaction are the resultant of the natures of the two substances and the conditions under which the combination took place. We must not, therefore, expect to find a factor which determines dominance, such as temperature, alkalinity, moisture, etc., but rather must determine the complex under which, when two materials are combined, definite results are produced. When the same materials are combined under the conditions of some other complex we may expect, and do find, that there are differences in the behavior and in products produced."

Along the same line are Tennent's[54] experimental results with crosses between two species of sea urchins, *Hipponoë* and *Toxopneustes*. In normal alkaline sea water the *Hipponoë* characters dominate in hybrid larvæ, whether this particular genus served as the male or the female parent form. A similar result is announced by Loeb, King, and Moore,[26] but Tennent carried the matter further, and found that when the alkalinity of the medium was reduced, the dominance of the *Hipponoë* character was diminished, and the contrasted peculiarity of the other species was more evident. This research, therefore, discovers a specific external influence which affects the relative degree of potency exhibited by one character with respect to another, even though the matter must be interpreted as Tower argues.

Heredity and Sex Determination.—The discoveries of recent years have led to a definite reversal of judgment regarding the nature of the factors which determine the essential characteristic of sex. Until the present decade it was generally supposed that influences external to the developing organism, such as excess or deficiency of nutriment, temperature, etc., possessed a deciding value for the production of one sex or the other. Not long after the rediscovery of Mendel's principles, when the Weismannian view of the efficiency of the chromosomes gained new adherents, fruitful efforts were made to treat sex as a heritable character in the sense that it is determined directly or indirectly by specific chromosomal elements. The lengthy reviews of Wilson,[58] Morgan,[33] and Montgomery,[31] in which the present state of knowledge regarding this subject is well set forth, amply demonstrate the success that has been attained through the employment of the essentials of the Mendelian principles.

It is now well established that in many species the male organism produces approximately equal numbers of two kinds of germ cells, while the eggs are all alike; that the spermatozoa of one type bear fewer chromosomes or smaller amounts of chromatin than there are in the spermatozoa of the other type or in the egg; and that the product of an egg fertilized by the first type of male cell becomes a male, while the alternative combination develops into a female. Stated in another way, it is fully demonstrated that in numerous species of insects and in certain other animals some of the male germ-cells possess a chromosome—X—which other spermatozoa lack, and that the mature egg ready for fertilization also possesses an X-element. A female results when the "duplex" combination arises through fertilization by the first type of sperm, and a male is produced by the "simplex" combination X, or XY, where Y represents a small single or multiple counterpart of the X-element. It follows that the somatic or body cells of the female have the duplex combination of chromosomes, and that the eggs retaining the reduced numbers of chromosomes after maturation will be similar, and all of them bearers of the X-element. The tissue cells of the male on the other hand, will lack certain elements; and as their X-elements belong to one series of chromosomes, segregated from the other series when maturation takes place, the spermatozoa will be of the two kinds specified—i. e., with and without the X-element.

It would be too much to say that all of the stages in this whole process have been observed or demonstrated in the life history of any one species, but every phase has been actually made out in one species or another; and many important additions to our knowledge have accumulated during the past year. Wilson[59] has published a sixth paper on the concrete facts, dealing in this case with an unusual example of the bug *Metapodius;* in this he amplifies the known types of correlation between the sex character of the male and specific chromosomes. Edwards[14] demonstrates the existence of an X-element in the nematode worm *Ascaris.* Stevens[49] and Blackman[1] find similar bodies in *Forficula* and in various myriopods respectively. Payne's[37] observations on *Acholla* are of much interest because of the greater disparity of the two types of spermatozoa as regards the numbers of chromosomes; these are 11 and 15 respectively. Morrill[36] has carried the matter beyond the periods of maturation and fertilization, and has found that the tissue cells of developing larvæ differ in the two sexes; those of the male larvæ lack chromosomes which are present in the tissues of the female, as the above scheme would lead us to expect. Finally, in this connection, comes the important paper of Guyer[16] upon certain stages in the spermatogenesis in man. Here also the male sex cells are of two kinds in chromosomal respects, and this case falls into agreement with the long series of insects. In view of all of the observations upon the germ cells of lower and higher animals, and because also the sexes are approximately equal in numbers in the majority of animals, the belief seems well-founded that sex is determined at the time the egg is fertilized, and that it is not capable of control by agencies external to the developing organism.

This being so, it is in a sense a matter of chance whether a given egg will be fertilized by a male-determining sperm or by its alternate. That it is indeed a chance result, is proved by the observations of Morgan, Payne, and Browne[35] upon the process of fertilization in the snail *Cumingia.* Wilson[60] also holds this view on general grounds. King,[24] it is true, finds that when the eggs of the toad are subjected to high degrees of temperature at the time of fertilization, an excess of females is produced; but it may be that this result is due to a direct inhibitory effect of the heat upon the male-producing type of spermatozoon. Russo's contention that the proportion of females among new born rabbits can be increased by feeding the mothers with lecithin is thrown out by Castle,[4] McClung,[30] and Jordan[23] on the basis of the author's own data.

Recent investigations upon parthenogenetic organisms, long supposed to be impossible to bring into line with ordinary forms, have yielded brilliant results, and have materially strengthened the belief that chromosomes are essential elements in the determination of sex. In these forms, like the aphids, phylloxerans, and rotifers, certain individuals produce eggs which are capable of development without fertilization, but they form only one polar body. Such eggs may develop into adults of either the male or female sex. It is true that external agencies may affect the change from the asexual to the sexual mode of reproduction, as McClendon,[29] Shull,[43–44] and Whitney[57] have demonstrated; but this change in mode or phase does not mean that the active external influences have a determinative effect upon maleness or its opposite. This is the real problem.

Morgan's[32] fundamental work upon the phylloxerans and aphids, together with the discoveries of Stevens[50] (and earlier papers) and von Bähr, has placed the whole matter on a par with the cases reviewed above. Fertilized eggs always become females, it is true, but this happens because certain spermatozoa only, namely those containing an X-element, become mature; those lacking the X degenerate. Therefore the fertilized egg possesses the duplex number of chromosomes, with the result stated. These authors have also shown that males are produced by parthenogenetic eggs which throw out definite chromosomes during maturation, so that the simplex combination remains. Instead of being discordant instances, therefore, these parthenogenetic organisms consistently extend our knowledge of the cytological basis for sex production in a truly significant manner.

Heredity, Selection, and Evolution.—According to the strict Darwinian view, only congenital characteristics can be inherited. This statement and Weismann's doctrines that the physical basis of inheritance is the chromatin, and that chromosomes differ qualitatively, are strongly supported by Mendelian phenomena of inheritance and segregation, and especially by the facts relating to sex outlined in the previous section. If these views are correct, then species can change in evolution only by the formation of new combinations of chromosomal determinants through hybridization and by gametic unions from slightly different members of a species, or by some chromatin change of a more drastic nature which produces a mutation. Selection would act upon such new combinations by weeding out the unfit adults conditioned by them, thus working ultimately upon hereditary strains of germ plasm; but it would not be capable of producing anything new by itself.

Much evidence has accumulated within late years to support such a view of the relation between selection and the germ-plasm basis. For example, Brainerd[2] has shown that in *Viola* new varieties can be produced by hybridization, and this, like the results of De Vries, suggests that the same process might well take place in nature. More significant conclusions are present by Shull,[46] East,[13] Pearl and Surface,[42] Love,[27] and Jennings.[21] In brief they find that it is impossible to produce any improvement by selective breeding beyond the limits set by congenital factors of heredity. A "species" is in reality a compound of subordinate forms, each of which is a "genotype," tending to breed true to its particular condition of variation or departure from the general average of its kind. Such genotypes can be isolated as pure strains even in forms like the protozoan *Paramoecium,* as Jennings has shown earlier; but improvement beyond certain well-defined limits is impossible. To mutation, then, and to hybridization in nature must be assigned higher values than the majority of biologists have been accustomed to give them.

Even in Tower's valuable work the effect of the environment is manifested, not in the production of entirely new forms, but in the guidance given to the congenital factors which produce a new combination of preexisting elements, and in the modification or inversion of the usual relations between the dominant and recessive members of a pair of alternative hereditary characteristics.

That the whole subject of environmental influence is still a fruitful field for investigation is amply proven by Sumner's[52–53] remarkable results with mice. Undaunted by the growing mass of facts that with each year add to the weight of evidence in favor of Darwin's scheme of evolution, this author undertook a series of experiments upon mice to ascertain whether acquired characters can be transmitted. In plain terms his results as presented seem to be affirmative. Mice reared under warmer temperatures develop longer tails and longer ears than individuals reared in colder rooms. The young of the modified mice, even when bred under normal temperatures, display modifications similar to those produced artificially in their parents. Sumner discusses at length several possible interpretations of the facts, and inclines to the Lamarckian view. One point he makes is this: that even if the change in the offspring is due to a direct effect of the altered temperature upon the germ plasm and not through the mediation of the effect produced upon the parent, the result is the same as though the latter were the case. That is to say, the value in evolution would be the same. In the reviewer's opinion, the high mortality among the mice of the warm room is a serious disturbing factor, which, no doubt, will be eliminated as the experiments are carried further, and additional tabulations are made possible.

Payne[38] has also carried out some valuable experiments of a similar nature, in the case of the fruit-fly *Drosophila.* For forty-nine consecutive generations these were reared in the dark, and although no structural modifications have been noted the author finds a marked diminution in the degree and promptitude of the reactions to light. These results bear directly and obviously upon the interesting problem as to the origin of cave faunas.

Certain of the more general aspects of the evolutionary process are treated in Johnson's[22] extensive monograph on the lady-beetles. On the basis of his wide studies of their distribution, variation, and heredity, Johnson concludes that their history exhibits the workings of determinative factors. By this he means that evolution shows "progressive variation in some definite direction, originating within the germ plasm either with or without external influence," and that the process has been gradual, either by mutation or by a wavelike advance. Morgan,[34] in a general paper, contrasts the conception of purposive evolution of adaptations with the view that they arise as the result of "chance" in the scientific sense. He finds no reason to believe in determinative or orthogenetic evolution, except in so far as a favorable adaptation, arising by chance, would in all probability be carried further in later variation.

Heredity and Genetics.—To what extent the new knowledge may be employed for the betterment of the human species remains for the future to show. Davenport[8] presents a significant collection of tables which indicate, among other things, that the process of inheritance is essentially the same in man and other organisms. If eugenics or genetics can do so much in the way of improving the breeds of lower animals, as Pearl,[39] and many others have pointed out, much should be possible in human breeding. It would seem that men of science rest under an obvious obligation to undertake the task of applying and employing known principles of heredity for the direct benefit of the human race, so far as social conditions may permit.

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BOTANY

PLANT PHYSIOLOGY

B. M. DUGGAR

A striking feature of the progress characterizing plant physiology is the closer association with physics and chemistry, that is, the dominant spirit is clearly an investigation of plant behavior with the full equipment and method of the basal sciences. Moreover, this progressive method is commendably divested of vitalistic tendencies, although appreciative of the peculiar structure and endowment of living matter—which renders the latter so markedly sensitive to environmental factors.

Toxins.—Since the early work of Kahlenberg and True,[6] Clark,[3] and others the study of toxic action has received special attention at the hands of American investigators; but while previously the effects of inorganic substances have been chiefly considered, the present field of work is more particularly that of the effects of organic compounds, especially the products of decay in the soil. Many nitrogenous bodies, chiefly decomposition products of proteins, the existence and accumulation of which were long suspected under certain soil conditions, have been isolated, and some few have been shown to possess surprising toxic properties. Viewed in conjunction with previous studies, a recent article[13] clearly exhibits the status of these investigations. In this connection mention is required of the study of bog "toxins" in which much progress has been made.

Water Relations. — Transpiration and the relation of plants to evaporation, the moisture of the air, and soil water are phases of physiology upon which particular stress has been laid for a short period. From the results obtained new points of view have been developed respecting the behavior of the stomata and the adjustment of plants in general.[9]–[10] That this field of work is of peculiar interest and importance is obvious from many recent contributions, such as several from the staff of the Desert Botanical Laboratory, those of Briggs[2] and Wiegand[14] upon evaporation, and of Reed[12] upon the effects of salt solutions in modifying transpiration.

Vegetable Proteins.—Studies upon plant enzymes[4-5-7] have shown a satisfactory advance entirely consistent with the development in this field in Europe, and while the work accomplished indicates no distinctively new viewpoints, it is evidence that the physiology of nutrition is under careful study by those directly or indirectly interested in plant behavior. The development in this field will be greatly stimulated by the timely appearance of the important and succinct monographs on biochemistry now being issued under the editorship of R. H. A. Plimmer and F. G. Hopkins, the notable American contribution to which is that of Osborne[11] on the vegetable proteins.

Reproduction.—The general physiology of reproduction has received far less attention in America than in Europe, when considered apart from heredity, variation, and evolution. Investigation in these latter fields has apparently drawn many investigators from other lines of physiological study.

Ecology.—In the field of special ecology and phytogeography few distinctive advances have been made since the important work of Clements, Cowles, Harshberger, Kearney, Spaulding, and many others of a few years earlier.* Nevertheless, much attention has been bestowed upon the production of apparatus and the perfection of methods for a more careful study and evaluation of environmental factors. Sympathy with the work of the various laboratories now engaged in physiological research (however it may be designated) along agricultural lines has led to a more careful examination of the results of all plant industry work with much profit and with a broadened horizon for study. Valuable ecological data of economic importance are afforded through certain crop-environmental studies of the Bureau of Chemistry,[8] also through studies of varied nature dealing with the vegetation and crops of the Great Plains, and especially the semi-arid regions.

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* It is, however, of special interest to note the establishment of an international commission on phytogeographic terminology.

Pedagogy.—From the standpoint of the pedagogics of plant physiology the conspicuous text of the year is that of the late Chas. Reid Barnes, this being part of a general college text jointly contributed. Barnes's Plant Physiology[1] is a cogent, lucid, expression of fundamental principles, and a definite record of various points of view which have dominated the important review work of this prominent teacher and editor. In spite of the omission of literature citations this book is a landmark, and it will take its place as a reference book for the college teacher alongside of Ganong's *Laboratory Course in Plant Physiology*, published a few years earlier, and his *Teaching Botanist*, just revised.

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MORPHOLOGY

J. M. Coulter

Morphological work during 1910 has been characterized chiefly by the further development of movements begun during the last decade. The emphasis is now being placed upon the genealogy (phylogeny) of plant groups, and only those morphological structures which bear upon this problem are receiving large attention. This means that numerous papers contributing important facts have appeared, but that both papers and facts are too numerous to cite, and it would be impossible to select a few for special mention.

No great group has received more attention during the last decade than the *gymnosperms*, and the results of all of this intensive study have been brought together in Coulter and Chamberlain's *Morphology of Gymnosperms* (Chicago), which appeared during Oct., 1910. Perhaps the most notable new presentation in this volume is that of the extinct gymnosperm group of the Coal-measures which everyone had supposed were "fossil ferns," simply because their leaves resemble those of ferns. In the same connection reference should be made to Wieland's (Yale) recent discovery in Mexico of rich beds of "fossil cycads," which he had previously uncovered in the Mesozoic of Wyoming.

The *angiosperms* were presented in the same way in 1903, and the work of 1910 has continued to make additions to the knowledge of critical structures and groups, extending the range of experience rather than developing new conceptions. The same may be said of *pteridophytes* ("fern-plants"), which in recent years have been presented more or less completely by Campbell (Stanford) and Bower (Glasgow).

The *bryophytes* ("moss-plants") and thallophytes (algae and fungi) are in a much more inchoate condition; but the students of these groups are making as rapid advances as the difficulty of the material permits.

The most notable movement in morphology developed during the last decade is the organization of vascular anatomy. This not only has become of immense service in reaching a probable phylogeny of the vascular groups, but also has permitted the recognition and use of paleobotanical material, so that it is possible to check morphological conclusions as to phylogeny with actual history. This development in the United States has been due chiefly to Jeffrey (Harvard) and his students, whose papers published during 1910, or awaiting publication, record notable advances. They have recently given special attention to the conifers, and have fairly well established the fact that the pines are the most ancient representatives of the group, rather than the most recent, as was formerly supposed; and the further fact that an abundant araucarian flora (a group of pinelike forms found now only in the Southern Hemisphere) existed along our Atlantic seaboard during the Mesozoic.

There are at least four movements in cytology that deserve mention: (1) During the last four years Strasburger (Bonn) has been investigating the problem of the determination of sex, supplementing the usual cytological observations by careful experiments. In one plant (a liverwort) at least, he found that the sexes are separated during the formation of spores. (2) For ten years Grégoire (Louvain) and his associates have been publishing a series of investigations on the life history (origin and fate) of the chromosome, the structure thought to be the physical basis of heredity. One important conclusion is that the chromosome has an individuality that persists from one cell-generation to another, and therefore from one individual to another. (3) During the same period, Harper (Wisconsin) and his associates have been prosecuting cytological investigations among the *fungi;* and have especially established the fact that sexuality is prevalent among the sac fungi. (4) It was natural that cytological investigation should be directed toward the origin of mutants, as DeVries has called the new species that arise suddenly from a parent form. Gates (St. Louis) has been especially active in this work, and has concluded that the differences which are visible in a mutant at its earliest stages are determined during the formation of the spores by the parent form.

PALEOBOTANY

EDWARD W. BERRY

The most interesting phase in the more modern study of paleobotany is the flood of light shed on the evolution of plants. Starting a few years ago in the demonstration by Oliver, Scott, and Kidston in Europe that a number of the supposed Carboniferous ferns were seed plants, successive contributions have been made by White, Arber, Grand, Eury, and Zeiller. These, coupled with the anatomical study of the American Mesozoic Cycads, by Wieland, have furnished a secure foundation for demonstrating the origin of the cycads and their allies, an enormously important group during the Mesozoic age, which took its origin from the ferns in the early Paleozoic. These studies have also furnished a starting point for speculations by Wieland and by Arber and Parkin on the probable ancestry of the Angiosperms, the dominant plant group in our living flora and one whose genesis has baffled all students of the subject.

The increasing acceptance of the homologous conception of the gametophytic and sporophytic generations of all plants, involving as it does the derivation of all the vascular plants from thalloid ancestors, has placed the subject on a reasonable basis. Lignier, in France, an earnest advocate of this view has advanced a very interesting, if largely theoretical, thesis on the origin of all of the higher plants. According to this theory Prohepatic, aquatic, or semiaquatic ancestors in which the life cycle embraced an asexual and a sexual phase furnished the starting point for two evolutionary lines, one represented by mosses in which the gametophytic phase became vegetatively important at the expense of the sporophytic phase, and the other by the club mosses and their fossil allies in which the sporophytic phase became the important one. These two groups have retained their primitive appendages while all of the remaining vascular plants have true leaves, which are morphologically modified thallus branches. It follows from this theory that the angiosperms as well as the gymnosperms are primarily descended from the ferns.

Literature.—During the year 1910 no contributions of any considerable magnitude have appeared. The work of American students has been largely the accumulation of facts along previous lines of work—White working on the Paleozoic, Knowlton on the Mesozoic and Cenozoic of the West, Cockerell on the Miocene of Colorado, Hollick on the Cretaceous of New York, and Berry on the Cretaceous, Tertiary and Pleistocene of the Atlantic and Gulf areas.

Such papers as have appeared during the year, of which a list is appended, may be considered as by-products of monographic work not yet published. They indicate that in the lower Cretaceous the North American flora was very similar to that of the other continents and that it was uniform in its character from Texas to Greenland. The upper Cretaceous flora which succeeded it likewise fails to indicate other than uniform climatic conditions and it has now been traced from Greenland southward along the Atlantic Coast to the Gulf area. The light which paleobotany is capable of throwing on past physical conditions is briefly indicated in a paper by Berry describing the presence of a subtropical strand flora in the Eocene of northern Georgia.

The value of fossil plants in geology is shown in the demonstration by Knowlton from paleobotanical data that the bulk of the 20,000 feet of supposed lower Cretaceous sediments along the Pacific Coast of the United States is of Jurassic age.

Two text-books have appeared in England during the year, a popularly written elementary book by Stopes and Vol. II of the Cambridge Biological series on *Fossil Plants* by Seward. The latter forms a volume of over 600 pages and is a mine of information, devoted chiefly to the Lycopodiales and Filicales, two great classes of plants whose representatives are already present in the strata containing the oldest known land plants.

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TAXONOMY

WILLIAM TRELEASE

Nomenclature.—Initial dates limiting priority changes in nomenclature, supplementing the earlier acceptance of Linnæus's *Species*, 1753, for vascular plants, were adopted by the International Congress at Brussels as follows: *Myxomycetes*, 1753. *Fungi*, Fries's *Systema*, 1821–32—but for Uredinales, Ustilaginales, and Gasteromycetes, Persoon's *Synopsis*, 1801. *Lichens*, 1753. *Algæ*, 1753—but for homocystic Nostocaceæ, Gomont, 1892–93, and heterocystic Nostocaceæ, Bornet and Flahault, 1886–88, for Desmidiaceæ, Ralfs, 1848, and for Œdogoniaceæ, Hirn, 1900. *Mosses*, Hedwig's *Species*, 1801–30. *Liverworts*, 1753. A list of established names of vascular genera earlier selected for exemption from priority rules was enlarged, and provision made for a similar thallophyte list to be considered by the next quinquennial congress, before which will also come limiting dates for bacteria, Flaggellatæ, Chroococcaceæ, and Diatomaceæ.

European Work.—A sixth edition of Engler's *Syllabus* epitomizes and ratifies taxonomic conclusions detailed in the *Pflanzenfamilien*, *Pflanzenreich* and *Vegetation der Erde*, which specialists are publishing under the leadership of this distinguished head of the German school. Among other large undertakings are analyses of the African flora centering in Berlin, Brussels, and Kew, the mid-European flora of Ascherson and Graebener, studies of the Philippine flora fostered by the government of the Islands, and the illustrations of higher plants emanating from the great establishment at Kew. Here may be mentioned, also, the exhaustive lectures of Lotsy on phylogeny, though no parts have appeared this year.

Indispensable aids in special groups in addition to several sets of exsiccatæ are found in volume nineteen of Saccardo's monumental *Sylloge Fungorum*, containing the first half of an index to illustrations of fungi; Lafar's handbook of technical mycology, and Lindau and Sydow's *Thesaurus*, continuations of Sydow's monograph of *Uredineæ and Ustilagineæ*, and the descriptions of midcontinental fungi begun many years ago by Winter in Rabenhorst's *Kryptogamen Flora;* in Müller's liverworts of this Flora and Stefani's analysis of the same group issuing from the Boissier herbarium; and, though gleaned from rather than embodying taxonomic study, in the *Geographie der Farne* of Christ. The greater part of the year's group revisions, as of its floristic output, are concerned with flowering plants; from among the many it is hard to enumerate a few.

American Work.—American taxonomic work has been well sustained. Of its published evidences a few only may be mentioned: A new edition of Prof. Gray's classical *Manual*, reelaborated by his successors at Harvard; a new edition of Coulter's *Rocky Mountain Manual*, remade by Nelson under the eye of its first author; parts of volumes nine (*Agaricales*), sixteen (*Pteridophytes*), and twenty-five (*Polypetalous Angiosperms*) of the "North American Flora" of the New York Botanical Garden; and catalogues of the plants of Connecticut and Maryland. Of restricted scope: a revision of the lichens of Minnesota by Fink, and of a part of California by Herre; many papers on fungi; a revision by Collins of the green algæ of North America, and of the blue-green forms—under the title *Minnesota Algæ* by Miss Tilden; the completing part of Grout's *Mosses;* and a revision of *Sphærocarpus* by Miss Haynes. As abroad, the larger part of taxonomic work has here been on vascular plants, and few of the numerous publications may be mentioned: a revision of alaskan grasses by Scribner and Merrill; descriptions of many tropical American species from the Gray herbarium, the National Museum, the New York Botanical Garden, and the Field Museum—in connection with which might be noted a fascicle of Urban's *Symbolæ Antillanæ;* further characterization of Central American plants by Capt. Smith, and of those of the Rocky Mountains by Rydberg; many notes on the New England flora, especially in *Rhodor*, and publications by distinguished specialists looking to an ultimate disentanglement of such genera, as *Thalictrum*, *Viola*, *Rubus*, and *Cratægus*, in which confusion now reigns. Quite unique, in this field, are the exquisite etchings of *Orchidaceæ* in Mr. Ames's publication under that title.

APPLIED BOTANY

GEORGE T. MOORE

While the term "applied botany" has come to stand for a fairly definite thing abroad, it is comparatively new in America and there is still occasion for pointing out the existence of this aspect of a subject, which frequently is considered to be devoid of any practical application. Even admitting that "all science is one; that pure science is often immensely practical; that applied science is often very pure science and that between the two there is no dividing line," there nevertheless exists the necessity for indicating to many the particular way in which science, especially botany, ministers to the definite needs of mankind.

Economic botany, often confused with applied botany, deals with the finished product, which either in its natural state, or after being subjected to some manufacturing process, is of use to man. Applied botany is more especially concerned with the particular activities of plants which result in the production of value; or, on the other. hand, the prevention of destructive processes due to harmful plants. Applied botany, then, deals with living processes, rather than results, and includes any practical application of these processes in agriculture, manufacturing, or the arts.

Accepting such a definition it at once becomes evident that applied botany cannot be confined to any one of the usually recognized divisions of the subject. In order to have a comprehensive knowledge of all that is going on in the field it would be necessary to be familiar with many of the accomplishments in plant physiology, pathology, and morphology, for all of these have an eminently practical side.

In Germany.—The association for applied botany of Germany, with a membership of nearly three hundred botanists, publishes annually a report, the contents of which indicate the scope of the subject in that country. Among the papers presented at the last two meetings were several on smoke injury to plants; the effect of, and remedies for, various plant diseases; the desirability of an organization to render expert botanical decisions in official matters; the grape industry, including a study of the anatomy of the vine and its significance in grafting; an investigation of the fibers of linen and flax; contributions to forest botany, etc. Thus it will be seen that applied botany in Germany simply means that aspect of bacteriology, plant morphology and physiology, which has a practical application and this is, of course, all it can mean anywhere. Consequently specific citations to literature upon this subject must be sought under other divisions of botany, particularly in certain branches of agriculture, such as plant breeding, phytopathology, forestry, and soil bacteriology, which, although often the purest botany, are more and more coming to be considered a part of that practical science which seeks to make the land more productive.

Government and State Publications.—The publications of the United States Department of Agriculture and of the various state experiment stations, too numerous to mention specifically, are full of interesting and important discussion of applied botanical subjects, not only having a direct bearing on agriculture, but often dealing with the broadest scientific facts of fundamental importance. While other countries may have taken the lead in some branches of botany, America is certainly entitled to first rank for work accomplished in the applied field. In this connection may be mentioned the pioneer work of Dr. Erwin F. Smith, and others, who by their brilliant investigations of the bacterial diseases of plants have pointed the way in this field for foreign botanists.

Soil Bacteriology.—In soil bacteriology, while America may be considered to have only recently seriously entered the field, the prospects for a large amount of scientific work of practical importance along this line is excellent. The recent large volume of Löhnis, of Berlin, on agricultural bacteriology, including the occurrence and activity of microörganisms in the making of fodder, the retting of flax and hemp, the fermentation of tobacco and manure, the bacterial flora of milk, cheese, butter, and the soil should be referred to, as indicating the possibilities of this growing branch of applied botany, the paramount importance of which is now but imperfectly realized.

ZOÖLOGY

Charles W. Hargitt

The progress of the year in zoölogy, as in certain other sciences, is almost wholly represented by contributions to the literature of the subject, mostly in periodical publications and official bulletins and reports, embodying the results of the studies and experiments of individual zoölogists. This review, therefore, must consist chiefly of a bibliography of these publications with an occasional comment upon the more important of them.

Taxonomy.—This subject, once very prominent in zoölogy, has become less so during current times, owing to the enormous development of other phases, such as morphology, physiology, etc. However, systematic zoölogy still holds an important relation to other departments, and the morphologist and experimentalist are dependent on a correct taxonomy. The current year has seen numerous papers and a few creditable monographs, chiefly issued by the National Museum, which is about the only medium through which such work finds publication. We still lack in this country any general journal devoted to literature of taxonomic character, though formerly the *American Naturalist* afforded such an organ.

The international commission of zoological nomenclature has taken up the subject of nomenclature with zeal, and it is hoped that this organized movement will achieve some simple and stable code of biological nomenclature.

Morphology.—Under this general caption may be included a large range of zoölogical subject matter, such as anatomy, embryology, histology, cytology, etc.

Embryology continues to be an attractive field of research. A marked number of cases have been subjected to reexamination in the light of the newer technic, or the stimulus which has come from new points of view. As an illustration may be cited a paper on Amphioxus by McBride, which takes up anew several phases of its ontogeny, particularly the origin of the germ-layers, with some review of the relation of these to similar phases in higher vertebrates. Further examples are recent papers on the developmental history of the chick. Researches by Patterson on the Gastrulation in the Pigeon's Egg, and Early Development of the Hen's Egg compel the admission that not a few of the former views are seriously erroneous and untrustworthy.

A recent paper by Charles W. and G. T. Hargitt on the Early Development of Scyphomedusæ raises questions of similar import, and a paper by the writer now in the press on *Problems of Coelenterate Ontogeny* further challenges certain current assumptions which have become more or less fixed in embryological dogmatics. These results, with others of similar import by Miss Blount, and facts contained in the recent book by Lillie, *The Development of the Chick,* make it quite certain that earlier conclusions leave much to be learned regarding the fundamentals of embryology.

Cytology.—No problem in cytology is more compelling at present than that of chromosomes, with the multiform speculations associated therewith. The literature has become enormous. The accompanying list are among those most accessible, and will suffice to show the general trend.

H. L. Wieman describes the chromosome problem as expressed in the interesting insect, Leptinotarsa signaticollis, which has been under such continuous observation by Tower for several years, and has afforded grounds for new modes of interpretation as touching several modern problems of biology. A point of more than passing notice is the occurrence in the germ cells of this organism of abundant evidence of amitosis. Amitosis is no longer waved aside as a mere incident of senility. Facts accumulated from manifold sources render impossible the intolerant attitude of Flemming, Ziegler, and others of like mind. The work of Child, Glaser, Patterson, and others, reënforced by that of Wieman, compels a frank recognition of the process as a perfectly normal one in cytogeny. Two of Wilson's most recent papers, The Chromosomes in Relation to the Determination of Sex, and Studies on Chromosomes, are important, since facts are submitted which seem to harmonize earlier difficulties and contradictions. These papers further emphasize the conception of physiological, rather than morphological, chromosome individuality, and compel the admission "that the data for an adequate or definitive general interpretation of sex are not yet at our command."

Physiology.—A series of studies, entitled Acapnia and Shock, from the laboratory of the Yale Medical School, chiefly the work of Y. Henderson, advance the theory that surgical shock is due to "acapnia," a decrease in the normal amount of carbon dioxide in the blood. It is shown that the failure of respiration and of circulation and of the nervous system in apnœa vera is due to the same cause—lack of carbon dioxide to act as the harmonic stimulant of nerve centers.

Studies upon lymph formation from the laboratories of Chicago University are being continued by Carlson and others.

At the Rockefeller Institute for Medical Research, extended studies are being made of the effects of the removal of considerable portions of the alimentary tract.

The work of Dolly on dogs, and that of Smallwood and Rogers upon various invertebrates have shown that associated with excessive muscular work there is a breaking down of certain cytoplasmic elements of the nerve cells.

The work of J. Loeb upon the physiology of fertilization must be mentioned, though it is impossible to state even briefly his findings. So far as development is concerned the process of fertilization is accomplished when the fertilization membrane is formed about the egg. Whether this involves an increase in surface permeability, as is held by Lillie and others, is still an open question.

Attempts to determine the fundamental character of certain vital processes through a study of temperature coefficients show invariably higher coefficients for low than for high ranges of temperature. Snyder suggests that the study of temperature coefficients of the viscosity of various body fluids and tissues may give a clue to the discrepancy. Riddle attributes this variation in the coefficient in the case of digestion in cold-blooded vertebrates to a destruction or inhibition of the ferment where the coefficient falls below 2, or rises above 3.

Experimental zoölogy constitutes a comparatively new department of zoölogy. In its relation to problems of growth, reproduction, disease, longevity, etc., it occupies a place of commanding importance, and has done more to clear up our conceptions of biological processes and laws than all the observations from Aristotle to Darwin. It must not be inferred that final conclusions have been reached, or that ultimate knowledge has been attained on many biological problems.

But it has become more and more evident that these are complex beyond definition.

Regeneration.—For nearly a score of years problems of regeneration have engaged zoölogical attention. T. H. Morgan has easily been a leader along this line. His last paper, The Dynamic Factor in Regeneration, announces a temporary conclusion of his work on Tubularia, an organism which has yielded large results. His students have greatly amplified and confirmed his work. Of these, A. J. Goldfarb has been a noteworthy contributor. His latest paper, Light as a Factor in the Regeneration of Hydroids, concludes experiments carried forward for several years.

Among others who have contributed ably are Child, Rand, King, Stockard, Morgulis, Emmel, Harrison, Bryne, Zeleny. The work of the writer on regeneration in medusæ was the first on this phase of the subject.

Economic Zoölogy.—While not new, this is perhaps less familiar than most other departments of zoölogy; and in its modern relations and methods it has become quite as scientific as any other.

The literature has become voluminous—almost to a fault; but much of it has to do with matter adapted to the somewhat promiscuous needs of breeder, gardener, experimentalist, critical experts, etc., and in many cases the subject matter has to be duplicated for gratuitous distribution to a varied constituency. Whatever may have been earlier mistakes, at present no pains are spared by Federal and state departments to put the varied departments of economic zoology under strict scientific supervision and probably no government is more alert and active in the scientific problems of the day than is our own.

Among the many avenues of economic interests are the United States bureaus of fisheries, entomology, animal husbandry, the several state agricultural experiment stations, and many similar institutions of private character, of which the Carnegie Institution is the most important.

Among the products of the bureau of fisheries during the year is a series of papers dealing with Sponge Culture, for the most part prize essays read before the fourth International Fisheries Congress, Washington. Important among them is one by H. F. Moore, The Commercial Sponges and the Sponge Fisheries, dealing with the subject broadly, its importance, extent, methods, etc., and amply illustrated with plates.

Entomology.—A most noteworthy book is that by Dr. Wm. M. Wheeler, *Ants, Their Structure, Development, and Behavior,* with numerous illustrations. It adds luster to American zoölogy as a permanent contribution of first importance. Another monographic work on entomology is Bulletin No. 1, Indiana Department of Geology and Natural Resources, *Coleoptera of Beetles of Indiana,* by W. S. Blatchley.

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XXV. BIOLOGY, BOTANY, AND ZOÖLOGY

The titles given afford an idea of the scope and character of current taxonomic work. In a few cases it will be observed that papers are of hardly larger merit than "check lists" of species. Others show critical and painstaking work of a high order.

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Blackman, M. W.—Spermatogenesis of Myriopods; Biol. Bull., XIX, 1910.

Donaldson, H. H.—Nervous System of the American Leopard Frog Compared with That of European Frogs; Jour. Comp. Neu. Psy., Feb., 1910.

Friedsohn, A.—Zur Morphologie des Amphibienblutes; Arch. f. Mik. Anat., April, 1910.

Hargitt, Chas. W. and G. T.—Early Development of Scyphomedusæ; Jour. Mor., Vol. XXI, 1910.

Herrick, C. J.—Relations of the Central Nervous System in Phylogeny; Anat. Rec., Feb., 1910.

Legros, Robert.—Sur quelque points de l'anatomie et du development de l'Amphioxus; Anat. Anz. Bd. 35, Nos. 23–24.

McBride.—Amphioxus; Quar. Jour. Mic. Sci., Dec., 1909.

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—— Early Development of the Hen's Egg; *ibid.*

Payne, Fernandus.—The Chromosomes of Acholia Multispinosa; Biol. Bull., Vol. XVIII.

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Carrell, Meyer, Levene and Manson. Rockefeller Institute.—Study of Alimentary Canal; *ibid.*

Henderson, Y.—Acapnia and Shock; Am. Jour. Phys., Vols. XXI–XXVI, 1908–10.

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Ewald, W. F.—Ueber Orientierung, Lokomotion und Lichtreactionen einiger Cladoceren und deren Bedeutung für die Theorie der Tropismen; Biol. Centr., Jan. 1, 15; June 1, 15, 1910.

Goldfarb, A. J.—Light as a Factor in the Regeneration of Hydroids; Jour. Exp. Zöol., Vol. VIII, 1910.

Jennings, H. S.—Diverse Ideals and Divergent Conclusions; Amer. Jour. Psy., July, 1910.

—— Experimental Evidence on the Effectiveness of Selection; Am. Nat., March, 1910.

Morgan, T. H.—The Dynamic Factor in Regeneration; Biol. Bull., Vol. XVI, 1909.

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Gudger, E. W.—The Habits and Life History of the Toadfish (Opsanus tau); Bull. Bur. Fisheries, XXVIII, 1910.

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XXVI. ANTHROPOLOGY, ETHNOLOGY, AND SOCIOLOGY

ANTHROPOLOGY AND ETHNOLOGY

A. A. Goldenweiser

Totemism.—Among the year's important contributions to ethnology, J. G. Frazer's *Totemism and Exogamy* (4 vols., London, Macmillan & Co., 1910) stands easily at the head of the list. Since 1869, when McLennan published his memorable articles on "The Worship of Animals and Plants" (*Fortnightly Review*, new series, 1869 and 1870), the subject of totemism has persisted in the limelight of scientific discussion. Works like L. H. Morgan's *The League of the Iroquois* (1851), and Fizon and Howitt's *Kamilaroi and Kurnai*, brought fresh material and enhanced speculation. The subject of exogamy, in its beginning almost contemporaneous with that of totemism, rose into prominence through the work of the same early investigator, McLennan, who first formulated the problem of regulation of marriage in his *Primitive Marriage* (1865) and *Studies in Ancient History* (London, Macmillan & Co., first series, 1876 and 1886; second series, 1896). The data and theories of totemism and exogamy were brought to a focus in J. G. Frazer's brief but solid treatise on *Totemism* (1887). With that date begins the modern phase in the study of both subjects. The work for a while is carried on independently in two camps. English writers like Lang, Hartland, and Frazer, build up a complex structure of theories of totemism and exogamy based chiefly on Australian material, as presented by Spencer and Gillen and earlier writers. In America, on the other hand, J. O. Dorsey, Miss A. Fletcher, and others, unravel the totemic organization of Siouxan tribes, while Franz Boas, under the auspices of the British Association for the Advancement of Science, lays the foundations for a scientific study of the tribes of the northwest coast of Canada. The publication of Spencer and Gillen's second work on *The Northern Tribes of Central Australia* (1904) and of A. Howitt's book on *The Native Tribes of South-East Australia* (1905), on the one side, and the investigations of the Jesup North Pacific Expedition conducted by F. Boas, J. R. Swanton, and others, on the other, tend to widen the gap between the European and the American views of totemism. The theories of Maj. Powell (*Man*, vol. ii, 1902) and of Ch. Hill-Tout (*Transactions of the Royal Society of Canada*, second series, vol. vii, 1901–02, and vol. ix, 1903–04), which partly present but mainly misrepresent the "American view," are met by the theories of Frazer (*Fortnightly Review*, 1899 and 1905), and of Andrew Lang (*Social Origins*, 1903, and *The Secret of the Totem*, 1905).

In his last comprehensive work, Frazer attempts an ethnographic survey of the facts of totemism and exogamy. Part of the fourth volume is devoted to a final version of his theories as to the origin and significance of the two institutions. "Totemism," defines Frazer, "is an intimate relation which is supposed to exist between a group of kindred people on the one side and a species of natural or artificial objects on the other side, which objects are called the totems of the human group." Although often associated with exogamy, totemism need not be so associated, and we may thus distinguish between *pure* and *exogamous* totemism. Both institutions, particularly exogamy, are closely correlated with the classificatory system of relationship. The author repudiates his former view that totemism is essentially a form of religion. He now maintains that the religious side of totemism is very variable and, relatively to other forms of belief and worship, but weakly developed; and that totemism — although it may, as in Melanesia and Polynesia, occasionally develop into a religion—is essentially a social, not a religious, institution.

Admitting that totemism may have developed in different ways in the various localities, the author thinks that it probably has everywhere originated in the same way. The first origin of totemism he connects with certain beliefs as to the causes of the conception of children held by some of the central Australian natives, as well as by the inhabitants of the Banks' Islands. These peoples are ignorant of the physiological causes of conception, and believe the latter to be due to the entrance into the woman's womb of a spirit animal, plant, or object, with which the child thus conceived is henceforth intimately associated. In its pure and original form this belief is found on the Banks' Islands. There we find "totemism in all its pristine simplicity. Theoretically, it is an explanation of childbirth resting on a belief that conception can take place without cohabitation; practically, it is respect paid to a species of animals, plants, or other natural objects, on the ground of their assumed identity with human beings." So far this totemism is individual, not hereditary; but when descent arises, it may develop on either the paternal or maternal side.

Exogamy.—In his attempt to trace the origin of exogamy, the author rejects the theories propounded severally by McLennan, Westermarck, and Durkheim. He practically indorses Morgan's old theory of the prohibition of marriage within the tribe in order to prevent the marriages of brothers and sisters. The whole process was one of conscious reformation. The group is split into two classes to prevent the marriages of brothers and sisters, into four classes to prevent those between parents and children, into eight classes to prevent those between the children of brothers and sisters, the marriages between other first cousins having been eliminated by the two-class system. The same scheme is made to account for the origin of the classificatory system of relationship which "has in fact resulted from a simple bisection of the community into two exogamous classes, and from nothing else." Why marriages between near relatives should at the outset have been objected to, the author does not pretend to understand. "The horror of incest" remains a mysterious instinct.

Through the labors of J. G. Frazer, ethnology has become richer by a vast, although perhaps not always objective, collection of material on totemism and exogamy. As to the author's theoretical postulates and his method of inquiry, a discussion of them is impossible within the limits of this review (*cf.* "Totemism, an Analytical Study," by A. A. Goldenweiser, in *The Journal of American Folklore*, vol. xxiii, 1910).

Primitive Mentality.—In a work on the mental functions of primitive peoples (*Les Fonctions Mentales dans les Sociétés Inférieures*, Paris, Félix Alcan, 1910), L. Levy-Bruhl puts up a strong case for that point of view in ethnology which the French sociologist, Emile Durkheim, and his associates, Hubert and Mauss, have stoutly sustained during the last decade or so. The author challenges the fundamental assumptions of writers such as Tylor, Frazer, Lang, and others. They hypothesize an essential psychic unity of mankind, a thoroughgoing similarity, not only of the lowest psychic reactions, but also of the higher mental functions. The theory of a universal animism as constituting man's first *Weltanschauung* follows as a consequence. The author questions our right to assume this psychic unity. Man's mentality is a social product; hence, the structural and functional characteristics of a given social group must be reflected in the mental make-up of that group; we must expect to find various types of mentality corresponding to the many varieties of social aggregates Differing as they do among each other, the mentalities of primitive groups do, however, constitute a relatively homogeneous whole when compared to the mentality of civilized societies whose social characteristics are essentially different.

If the social factor in man's thought and belief is duly emphasized, the fallaciousness of the attempts to find rational interpretations of primitive beliefs, customs, and activities, becomes apparent. The thought of the group, what the author calls "collective representations," is passed on from generation to generation as a social inheritance. The individual is no more responsible for what he believes than he is for what he does and thinks. The mentality of the group is forced upon him from early childhood; and if we want to understand him—if, indeed, we may—we must turn to the social body whence he derives his mental characteristics.

An analysis of primitive mentality leads the author to the conviction that it is relatively indifferent to the law of contradiction which lies at the root of our own logical processes. Instead, that mentality is dominated by the law of *participation*, according to which objects and beings, which from our objective point of view seem quite different, may yet be considered related in virtue of some characters, mostly mystic characters, common to them all. Thus primitive mentality is *prelogical* and mystical. In its representations objective reality counts for little, while mystic connections become all-important. As the primitive man does not rely on his individual experience of the world to form his beliefs and convictions, experiences which run counter to his established mode of feeling and thinking are powerless to upset them. What is true of the separate elements of primitive mentality must needs apply to the relations between these elements, as well as to the processes of generalization and abstraction to which they are subjected. The author takes pains in the larger part of his work to illustrate and substantiate his contentions by an analysis of primitive languages and systems of numeration, supplemented by a review of magical practices associated with the chase and hunt, war, medicine, divination, puberty, burial, etc.

We may not absolutely indorse the author's conclusions. He seems to overemphasize the contrast between the mentality of the primitive man and that of the civilized. The importance of the social factor in our own mentality, as well as the rôle played by individual mental effort in primitive life, are unjustifiably neglected. It is this shortcoming that makes the author view the relations between savage and primitive psychology at a wrong angle. This notwithstanding, the author's work constitutes an important contribution to the theory of ethnology not only in so far as he emphasizes the social and emotional factors, but also in so far as he succeeds in demonstrating the close correlation between the social structure and the mentality of a group.

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Ehrenreich, Paul. — Die allgemeine Mythologie und ihre ethnologischen Grundlagen. Leipzig, J. C. Hinrichs'sche Buchhandlung, 1910. The author gives a clear and authoritative exposition of the main problems of modern mythology, and criticises the theories of the leading writers on that subject. Ehrenreich tries to substantiate his main contentions, viz.: that the common elements of all mythologies must be derived from nature; that the primitive man's attitude toward nature found expression in nature myths; that nature myths lie at the root of all mythology, and that no other assumption would enable us to satisfactorily classify and interpret the mythologies of the various peoples of the world (*cf.* the author's "Die Mythen und Legenden der südamerikanischen Urvölker," 1905; his article, "Götter und Heilbringer," in Zeitschrift für Ethnologie, 1906; and R. H. Lowie's "The Test Theme in North American Mythology." Journal of American Folklore, vol. xxi, 1908).

Gennep, Arnold van.—Réligions, Mœurs et Légendes, Deuxième Série, Mercure de France, Paris, 1909. This second volume of van Gennep's essays (the first appeared in 1908) brings two treatises on totemism in which the author takes a negative attitude toward the existence of totemism among the ancient Romans and Egyptians. Another interesting essay deals with the value of folk-lore as historical evidence.

Haddon, A. C.—Races of Man and Their Distribution. London, Milner & Co., Ltd. In this little volume of the Twentieth Century Sciences Series the author gives a concise introduction to anthropology. He classifies the races of man as ulotrichous (woolly-haired), cymotrichous (wavy-haired), and leiotrichous (straight-haired). In these main divisions a subclassification is made according to head form and skin color, followed by a short description of the peoples of Oceania, Africa, Europe, Asia, and America in their physical and cultural characteristics.

Handbook of American Indian Languages (Bulletin 40), Part 1, Washington, Government Printing Office, 1910. With the appearance of these linguistic sketches begins the publication of an extended series of monographs on the languages of the North American Indians. The work, which will fill several volumes, is edited by Franz Boas. The introduction by the editor contains a discussion of language in its relation to culture and race, as well as a more special treatise on the various types of languages, and on the general characteristics of American languages. The monographs, so far published, are: Athapascan, by P. F. Goddard; Tlingit and Haida, by J. R. Swanton; Tsimshian, Kwakiutl, and Chinook, by F. Boas. Further studies are in press.

Hartland, E. S.—Primitive Paternity. London, David Nutt, 1909. The author's purpose in this two-volume work is to demonstrate that "for generations and aeons the truth that a child is only born in consequence of an act of sexual union; that the birth of a child is the natural consequence of such an act performed in favoring circumstances, and that every child must be the result of such an act and of no other cause was not realized by mankind; that down to the present day it is imperfectly realized by some peoples, and that there are still others among whom it is unknown." With that end in view, the author makes use of a rich store of custom and folklore, to discuss magic practices to obtain children, transformation, and metempsychosis, mother- and father-right, marital jealousy, and the physiological ignorance on the subject of conception.

Meinhof, Carl.—In an article on the "Ergebnisse der afrikanischen Sprachforschung" (Archiv für Anthropologie, 1910) the author passes in rapid review the progress of linguistic research in Africa. The phonetic harvest is plentiful. In Suaheli, e. g., the author records "light" and "heavy" vowels, such as *i* and *u*, of which the first has practically no influence on the preceding consonant, while the second mostly transforms it into *f* or *v*. Clicks and glottal stops are common features. Sudanese phonetics seem to indicate that isolating languages are peculiarly apt to have musical intonation as an element of their phonetic systems. Grammatical analysis furnishes much of high theoretical interest. The Ful language, e. g., possesses a set of suffixes by which nouns are differentiated into categories, such as men, animals, trees, etc. By means of prefixes, on the other hand, a distinction is made between a person and a thing, and large and small things.

Schmidt, P. W.—Die Stellung der Pygmäenvölker in der Entwicklungsgeschichte des Menchen. Stuttgart, Strecker und Schröder, 1910. As pure pygmies the author regards in Asia, the Negritoes, Andaman Islanders, and Semang; in Africa, the pygmy tribes of Central Africa and the Bushmen. These various pygmy tribes, the author maintains, constitute one race, and their distribution in former times must have been much wider. They bear all the marks of extreme primitiveness, and must be regarded as the original human race from which the tall races have gradually evolved. Thus the author indorses Kollmann's theory enunciated as early as 1894, that the tall races have descended from pygmies; he differs from Kollmann, however, in so far as the latter assumed a distinct pygmy race for each of the tall races, while Schmidt defends the racial unity of the pygmies (*cf.* the reviews of Schmidt's work by Kohlbrugge, Anthropos, 1910, and Schwalbe, Globus, 1910; as well as J. H. F. Kohlbrugge, Die Morphologische Abstammung des Menschen, Stuttgart, Strecker und Schröder, 1908, and G. Schwalbe, Die Vorgeschichte des Menschen, Braunschweig, F. Vieweg & Sohn, 1904).

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Boas, Franz.—The Kwakiutl of Vancouver Island. Leiden, E. J. Brill, 1909. This sumptuously illustrated work, which forms Part II of the fifth volume of the Jesup North Pacific Expedition publications, gives a complete description of the material culture of the Kwakiutl.

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Matthew, John.—Two Representative Tribes of Queensland. London, Unwin, 1910. The Kabi and Wakka are each divided into two phratries and four classes. As a rule, one class of one phratry may marry only one of the classes of the other phratry. Some animals, plants, and objects are closely associated with one or the other phratry. A theory as to the origin of Australians is propounded by the author.

Morice, Father A. G.—The author continues his studies on "The Great Déné Race" (Anthropos, 1910). He discusses occupations, travel, transportation, commerce, currency, hunting, and fishing.

Routledge, W. S., and Routledge, K.—With a Prehistoric People. London, 1910. The authors deal with the Akikûyu of British East Africa. These people are divided into thirteen exogamous clans. Other marriage restrictions are mentioned. The material culture is treated with particular care.

Schmidt, Emil.—The posthumous "Beiträge zur Anthropologie Süd-Indiens" (Archiv für Anthropologie, 1910) is an important technical contribution to the somatology of those peoples.

Seligmann, C. G.—The Malanesians of British New Guinea. Cambridge, University Press, 1910. Interesting is the account of the totemic system of the Mekeo. Male descent prevails, and there is a marked tendency toward the localization of totem groups. Considerable space is devoted to a discussion of "linked" totems, a subject on which the author has already contributed a number of articles.

Sternja, Knut.—"Les Groupes de Civilization en Scandinavie à l'Epoque des Sépultures à Gallerie" (Anthropologie, 1910). The author maintains that during the above period three peoples of distinct civilizations occupied three different parts of Scandinavia.

Strehlow, C.—Die Arañda und Loritja-Stämme in Zentral-Australien, III Teil. Frankfurt-am-Main, Joseph Baer & Co., 1910. This is the third part of a work of which parts I and II appeared in 1907 and 1908 respectively, and which is published by the ethnological museum of Frankfurt-am-Main, under the editorial guidance of von Leonhardi. The author, missionary Strehlow, is well versed in the languages of the Aranda and Loritja, which fact lends to his researches an authoritativeness above that of Spencer and Gillen's works on the same tribes. Some of those authors' facts and conclusions are substantiated by Strehlow's researches, others are superseded. Part III brings us, together with an important introduction by von Leonhardi, the description of fifty-nine totemic cults of the Aranda. Numerous songs relating to ceremonies are rendered in text with interlinear and free translations.

Thurston, Edgar, and Rangachari, K.—Castes and Tribes of Southern India. Seven vols., Madras, Government Press, 1909. This work, arranged in the form of an encyclopedia, contains a mine of information on the tribes of Madras, Pudukottai, Banganapalle, Sandur, Travancore, and Cochin. The data referring to religion, totemism, marriage laws and customs, are particularly plentiful, and make the work a thesaurus of anthropology.

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SOCIOLOGY

A. A. TENNEY

Teaching.—The scientific study of society, as sociology may be defined broadly, is nowhere receiving greater attention than in the United States. In the fall of 1909 an investigation into the number of colleges, universities, theological schools, and state normal schools teaching sociology in this country placed the total at 400. The subject was found to occupy the entire time of fifty-five instructors and a portion of the time of 372. A complete survey would have taken account also of much work of a sociological character by teachers of psychology, education, and allied subjects.

Theory.—Recent progress in the development of sociological theory has been marked. The field has been differentiated sharply from that of anthropology, political economy, and philanthropy. The task of sociology is now recognized to be properly the scientific investigation of the collective struggle for existence and advantage, its antecedents or causes, its factors and processes, its products or results. Its function is to provide a basis for the rational criticism of public policy. Typical of the new emphasis upon the practical bearings of social theory is Prof. C. H. Cooley's new book on *Social Organization: A Study of the Larger Mind.* Analyzing the way in which public consciousness arises and how it reacts upon the mental life of the individual, Prof. Cooley traces the rise and development of ideals in complex societies from those of the "primary groups" of the family, playground, and neighborhood. A further examination of how the application of these ideals in society at large is being hindered by the development of classes and castes takes him into a stimulating discussion of means for the attainment of democracy in this country. Typical of the same practical attitude is the fact that in his *Social Psychology* Prof. E. A. Ross, of the University of Wisconsin, after analyzing with acumen the constraining effect of emotional phenomena that may arise in a crowd, devotes an effective chapter to "prophylactics against mob mind."

A Quantitative Science.—Less obviously practical in aim but likely to prove of more value in the end is the movement just gaining headway whereby it is hoped to remove sociology from the merely qualitative sciences, and give it a place among those that employ the quantitative method. Particularly significant in this movement was the paper by Prof. F. H. Giddings, of Columbia University, at the last annual meeting of the American Sociological Society, entitled *The Social Marking System, Proceedings of the American Sociological Society,* Vol. IV (1909). In this paper it was shown that statistical methods used by Francis Galton and Karl Pearson with telling effect in biology are also applicable to sociology. In addition to demonstrating the value of this method, Prof. Giddings reached the highly important conclusion that in ethnic or racial composition the people of the United States are now becoming, contrary to the prevailing impression, slightly more homogeneous; but that in religious persuasion and associations they are still becoming slightly more heterogeneous.

The Proceedings of the American Sociological Society for 1909, in which Prof. Giddings's paper appears in full, contain other important contributions to social theory presented at the same meeting. Especially noteworthy was that entitled *Religion and the*

Mores, prepared by Prof. Wm. G. Sumner, of Yale, as the presidential address for delivery on the day which saw him stricken by a fatal illness. In this article was set forth Prof. Sumner's view that the various religions of the world are products of the Mores—the intimate life and customs—of the various peoples where they flourish, rather than the products of revelation or of great thinkers. Quite in harmony with this theory of religious development is the treatment of the topic *The Rôle of Magic* in another paper read at the same meeting by Prof. T. J. Shotwell, of Columbia University. Religion, according to Prof. Shotwell, has undergone an evolution in which the principle of a mysterious or magic power has played a leading part. "At first the brute recoil from things of terror, the sense of wonder at their awful power, the thrill that came to the confused senses from any imagined cause—this psychic reaction—adjusts itself, reaches out to further and undreamed of possibilities as the reflex of the widening experience of man until at last it compasses the whole range of religious emotion." From a similar general standpoint also Prof. Hutton Webster, of the University of Nebraska, discussed *The Influence of Superstition on the Evolution of Property Rights.* In particular he traced the relation of magic and primitive religion to individual ownership.

Other important papers were read at this meeting and appear in the *Proceedings:*

Other speakers at this meeting, their topics and their central ideas, were: Prof. Charles A. Ellwood, of the University of Missouri, *The Psychological View of Society.* The object of all scientific study of society is to discover regularity in the forms of interstimulation and response among individuals. E. Dana Durand, director of the census, *Changes in Census Methods for the Census of 1910.* Improvements are to be expected in the examination and selection of enumerators, in the simplification of schedules, and in the presentation of results. Prof. Walter F. Willcox, of Cornell University, *The Outlook for American Statistics.* With diminution of frontier areas, record keeping is becoming greater in amount and better in character. Statistics is becoming a recognized profession. Prof. Albert G. Keller, of Yale, *The Study of Homeric Religion.* Analysis of legendary material similar to that of Homer develops scientific method in sociological research. Prof. J. Q. Dealey, of Brown University, *The Teaching of Sociology.* At Brown, sociology is not identified with concrete studies of social problems, nor with economics, political, ethical, psychological or biological studies as such, but, rather, is based upon broad generalizations found in these special sciences as laws and principles of human association. Prof. Lester F. Ward, of Brown University, *Sociology and the State.* Sociology, in spite of many charges that it is a pseudo-science, continues to gain ground; it will not succumb under the attack of a political scientist who maintains that the field of sociology falls under the single conception of the state. Prof. Albion W. Small, of the University of Chicago, *The Sociological Stage in the Evolution of the Social Sciences.* The study of the social sciences has progressed from examination of special fields to the investigation of principles of interpretation common to all of them. Prof. J. M. Williams, of Hobart College, *Outline of a Theory of Social Motives.* The analysis of social motives must include examination of the relation of instructive reactions to mood. Prof. George A. Coe, of Union Theological Seminary, *Notes on the Recent Census of Religious Bodies.* Membership has increased faster than population, but the large number of small churches shows a loss of possible efficiency.

Eugenics.—Within the past few years the movement for the "improvement of the human race by better breeding," started in England by Prof. Francis Galton, has gained considerable footing in the United States. Adherents of this movement hold that sufficient knowledge of the laws of heredity has now been gained to warrant a propaganda for the practical application of that knowledge in legislation for the control of the reproduction of the defective classes and for the formation in the public mind of marriage standards that shall take into account the fitness of the contracting parties for parentage.

The most active work in this country is now being carried on by the Eugenics Committee of the American Breeders' Association — Prof. David Starr Jordan, president, and Prof. C. B. Davenport, Carnegie Institution, Laboratory, Cold Spring Harbor, N. Y., secretary. Other scientists on the committee are: Alexander Graham Bell, Luther Burbank, Prof. W. E. Castle (Harvard), Prof. C. R. Henderson (Chicago), Adolph Meyer (Johns Hopkins), J. A. Thomson (University of Aberdeen), H. J. Webber (Cornell), F. A. Woods (Harvard Medical School). The Eugenics' record office, which seeks to accumulate and study the records of physical and mental characteristics of human families, is located at Cold Spring Harbor, N. Y. The superintendent is Prof. H. H. Laughlin.

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THEORIES OF SOCIAL ORGANIZATION

ALGERNON LEE

SOCIALISM

Origin and Principles of Socialism. —The Socialist movement dates from the revolutionary period of 1848. Karl Marx and Frederick Engels then wrote the *Communist Manifesto*, which still serves, with some slight qualification, as an authoritative statement of Socialist principles and purposes. Socialist theory begins with a critical analysis of the existing economic system, in which the means of production (land, mines, railways, factories) are operated chiefly by the joint labor of many nonpossessing wage-workers, but are owned as private property by other persons, known as capitalists. The workers' wages are determined by competition in the labor market, and generally tend down to the level of the cost of subsistence. The net value of their product, however, is determined by the amount of their labor, and vastly exceeds their wages. The excess of net product over wages falls to the capitalists, solely by reason of their ownership of things which other men must have in order to work and live. The workers are thus automatically exploited and kept in poverty, while wealth accumulates in the hands of the capitalists. The economic interests of capitalists and wage-workers are diametrically opposed. The former desire at the minimum expense to themselves to get the maximum of labor from the workers; the latter desire less labor and a larger return for it. This conflict of interests shows itself in the organization of labor unions and employers' associations, in strikes, lockouts, boycotts, and blacklists, in the struggle for laws and judicial decisions favorable to one class or the other. From the economic field the struggle extends itself to that of politics, and the Socialist Party expresses the revolt of class-conscious wage-workers against the capitalist system. While promoting immediately practicable reforms, the Socialist movement also aims at an ultimate reorganization of the economic system which shall put an end to the private appropriation of profit, interest, and rent, and to the distinction between capitalists and workers. Socialists regard such a reorganization as a necessary outcome of the economic and social evolution now actually taking place—an outcome which their scientific analysis enables them to foresee and which their conscious efforts may facilitate. The increasing organization of industry relieves the capitalists from their original functions of management and superintendence, which are now performed chiefly by hired workers. In the competitive market, large capital has an advantage over small capital; thus competition among capitalists tends to bring about concentration and virtual monopoly. Capitalism itself, in its full development, thus renders capitalists unnecessary; it creates the antagonistic force of the wage-working class; it trains these in habits of joint action and administration; it points to public ownership of the means of production as the only alternative to private monopoly; and it prepares for the socialization of industry by organizing it on a national or international scale. Socialism, as an ideal of social reorganization, does not involve regulation of the people's private lives nor interference with private ownership of "consumption goods," and individually used means of production. It involves public ownership and democratic control of only such means of production as are socially necessary and require the joint labor of many persons to operate them. The Socialist movement seeks to educate and organize the working classes for political action to use the powers of legislation, taxation, and jurisdiction in establishing such public ownership. It regards labor unions and coöperative societies as valuable allies.

Growth and Present Strength of Socialism.—The Socialist movement grew slowly for several years after 1848. In 1864 was organized the International Workingmen's Association, which exercised an immense influence throughout Europe and had branches in the United States. Under severe persecution by the Continental governments, it came to an end in 1873, its dissolution being hastened by the rupture between the Socialists, who formed the dominant element, and the Anarchists led by Bakunin, who had adhered to the movement. But although the International was destroyed, the seed it had sown sprang up.

In Germany a Socialist Party under Marxian leadership was organized in 1869. Six years later it fused with the General Workingmen's Association, founded by Ferdinand Lassalle in 1863, to form the Social Democratic Party. In 1871 the Socialists cast 102,000 votes and elected two members of the Reichstag. By 1877 their vote had grown to 493,000, electing twelve members. Alarmed by this rapid growth, the Bismarck government in 1878 enacted the "Exception Laws," which forbade nearly all forms of Socialist organization and propaganda under heavy penalties of fine and imprisonment. For more than ten years these laws were rigidly enforced, but with little success. In 1881, indeed, the Socialist vote fell to 312,000, but after that it steadily increased, reaching 1,427,000 in 1890. This led to the overthrow of the Bismarck régime and the repeal of the Exception Laws. The increase of the Socialist vote has continued; in 1907 it amounted to 3,259,000, electing forty-three members of the Reichstag, to whom nine have since been added in by-elections. The Socialists have exercised a powerful influence on imperial legislation. While stubbornly opposing the protective tariff system and voting against appropriations for the army, navy, and secret service, they have forced the government to carry out a far-reaching policy of social reform, including insurance of workingmen against sickness, accident, and old age, laws limiting hours of labor and providing for sanitation of places of employment, etc. They have also a strong representation in the legislatures of several German states and in many city councils. The foremost leaders are August Bebel, Paul Singer, Karl Kautsky, Edward Bernstein, Karl Legien, Emanuel Wurm, R. Molkenbuhr, H. Ledebour, Karl Liebknecht, Clara Zetkin, and Rosa Luxemburg.

In France a Socialist Party following the principles of Marx was formed in 1882, under the guidance of Jules Guesde and Paul Lafargue. For more than twenty years the forces of French Socialism were divided into several parties, with Edouard Vaillant, Jean Allemane, and Jean Jaurès among their other prominent leaders. In 1905, however, a lasting unity was effected. The Socialist vote has grown from 30,000 in 1885 to 878,000 in 1906, and to 1,106,000 in 1910. This does not include some 200,000 votes given to independent candidates, outside the party, but in general agreement with its purposes. In this last year seventy-six party candidates, besides several independent Socialists, were elected to the Chamber of Deputies. Among their principal legislative achievements are old-age pensions, the weekly rest-day, limitation of working hours, and a considerable body of factory laws. They played an important part in the separation of church and state and have taken a firm stand against militarism. French Socialism is very strong in the municipal field. There are 3,800 Socialists in 500 city councils, and in several places they are strong enough, in combination with the Socialistic Radicals, to carry out such reforms as erection of dwellings to be let to workingmen at cost, establishment of municipal slaughter houses and markets, provision of meals for schoolchildren, and insurance of workingmen against sickness, accident, and unemployment.

The Austrian Socialist Party was founded in 1888. It had to struggle for existence against severe measures of repression, but in 1907 it polled 1,042,000 votes and elected eighty-seven of its candidates to the Reichsrath. Another seat has since been won in a by-election. Victor Adler and Ignatz Daszynski are among the best known members.

Exceptional conditions have given a peculiar character to the Socialist movement in Russia. Its beginnings may be traced to the early seventies. At first a peaceful movement of propaganda, merciless persecution drove it to reprisals, and it opposed political assassination to the activity of the Cossacks and the hangmen. Its first organization, the "Narodnaya Volya" or People's Will, was virtually exterminated about 1882, but it soon revived in new forms. In 1883 George Plechanoff took the lead in organizing what is now known as the Social Democratic Labor Party. This party discountenances the policy of terrorism, though justifying political assassination in exceptional cases; it relies on the organization of the slowly increasing industrial wage-working class, expecting the time to come when the development of commerce and manufacture will compel the establishment of constitutional government, with civil liberty and the possibility of normal political action. The Revolutionary Socialist Party adheres to the terrorist policy and looks especially to the peasants for support. A third organization is the "Bund" or Jewish Workingmen's Federation, which leans to Social Democratic rather than terrorist views. There are also special organizations among the Poles, Finns, Letts, Armenians, and other subject nationalities. All these bodies played an important part in the revolutionary days of 1905–6, and all have suffered terribly in the subsequent reaction. It is impossible to estimate accurately the number of Socialists in Russia. They elected over 100 members of the Second Duma in 1907, but most of these have since been executed, imprisoned, or driven into exile.

Socialism in Great Britain took definite political form in 1883, with the organization of the Social Democratic Federation, now the Social Democratic Party, of which H. M. Hyndman has been the recognized leader. The Independent Labor Party was formed in 1893 and soon declared itself for Socialism. Its foremost representatives are J. Keir Hardie and J. Ramsay Macdonald. The Fabian Society, counting among its members G. Bernard Shaw, H. G. Wells, and other noted men of letters, also performs an important work of Socialist propaganda. In the year 1903 certain judicial decisions injurious to organized labor roused the trade unions to aggressive political activity. The result was the formation of the Labor Party, a permanent coalition in which the Independent Labor Party and some other Socialist bodies unite with a number of trade unions in nominating candidates and conducting campaigns, while maintaining their autonomy for other purposes. In 1906 this coalition polled 323,000 votes and elected thirty members of Parliament, to whom three more were added in by-elections. In 1910 the Labor Party's vote rose to 506,000, but only twenty-eight of its candidates were successful. These, with twelve other trade-union candidates, constitute the Labor group in the present Parliament. At its convention in 1908 the Labor Party formally declared for the Socialist ideal. Candidates of the Independent Labor Party, which is the most clearly socialistic part of this combination, received 76,000 votes in 1906 and 92,000 in 1910. The Social Democratic Party, which is not included in the Labor Party, polled 30,000 votes in 1906 and 33,000 in 1910. Four distinct legislative victories have been won since 1906, as follows: The Trades Disputes Act, reversing the judicial decisions of 1903 and protecting union treasuries from being levied upon by employers for damages incurred in strikes and boycotts: revision and improvement of the Workingmen's Compensation Act; the establishment of old-age pensions; and an act permitting local authorities to provide meals for schoolchildren.

In the United States Socialism was practically confined to certain foreign elements until the industrial depression of 1893. The Socialist Labor Party first entered a national election in 1888, polling 2,000 votes. By 1898 this number had grown to 87,000. A schism took place about this time, and since 1900 there have existed two parties—the Socialist Labor Party, led by Daniel DeLeon, whose vote had dwindled to 32,000 in 1908, and the Socialist Party, among whose leaders are Eugene V. Debs, Victor L. Berger, Morris Hillquit, and A M. Simons, and which cast 424,000 votes in that year. The Socialist Party has elected members of the legislatures of Massachusetts and Wisconsin and of several city councils. Its National Secretary, J. Mahlon Barnes, has headquarters at Chicago.

The following table summarizes the voting strength of Socialism in several other countries and its representation in their parliaments:

Countries.	Votes.	Representatives.
Belgium, 1908	483,000	42
Finland, 1910	317,000	86
Italy, 1909	339,000	39
Denmark, 1910	99,000	24
Switzerland, 1908	100,000	7
Holland, 1909	82,000	7
Norway, 1909	90,000	10
Sweden, 1909	75,000	36
Spain, 1910	40,000	1

Counting the smaller contingents from Hungary, Roumania, Bulgaria, Servia, Greece, Portugal, Canada, Chile, Argentina, Australia, New Zealand, Japan, and South Africa, the Socialist voters of the world number more than 8,000,000. The adult male adherents of the movement who are disfranchised in various countries are nearly as numerous. Together, they constitute fully one tenth of the adult male population of the civilized world. Only within the last five years has the movement begun to get a foothold in China, India, Persia, Turkey, Mexico, and South America.

Socialism in 1910.—In April, 1910, the Socialists carried the city of Milwaukee, electing the mayor (Emil Seidel), controller, treasurer, city attorney, and twenty-one of the thirty-five aldermen. This administration is still too young to give an account of its achievements, but its advent has greatly strengthened the movement throughout the country.

In May the Socialist Party held a national convention at Chicago to perfect its organization and methods of action and consider special questions, such as immigration, relation of the party to labor unions, its attitude on questions affecting the interests of farmers, and propaganda of Socialism among women. The secretary's report showed that the organization then had over 50,000 members, paying dues of twenty cents a month, and that its principles were supported by sixty-two periodicals, including nine dailies—three English, two German, two Bohemian, one Polish, and one Jewish.

The state and congressional elections held on Nov. 8th gave results very favorable to the Socialist Party. Complete and exact returns are not yet available as this volume goes to press, but the most conservative estimates put the Socialist vote at 700,000 for the whole country, with a gain over the vote of 1908 in every state in the Union. Thirteen Socialist legislators were elected in Wisconsin, and one each in Massachusetts, Pennsylvania, Minnesota, and North Dakota. For the first time the Socialists have won representation in the United States Congress, electing Victor L. Berger to represent the Fifth Congressional District of Wisconsin.

During the year general elections were held in Great Britain, France, Spain, Greece, Denmark, and Finland. In all cases the results were favorable to the Socialists. In Great Britain the votes of the two definitely Socialist parties was increased by eighteen per cent over that of 1906, while the whole Labor Party vote was increased by fifty-seven per cent. In France the increase in the same period was twenty-six per cent. In Spain the Socialists combined with the Republicans to overthrow the reactionary régime which had prevailed since the Catalonian revolt of 1909. For the first time a Socialist, Pablo Iglesias, was elected to the Cortes. The Danish election gave the Socialists a gain of six per cent over their vote in 1909. In Finland they have made steady progress ever since universal suffrage was established. In 1907 they cast thirty-seven per cent of the total vote and elected eighty of the 200 members of the Diet; in 1908 they cast thirty-eight per cent of the vote and elected eighty-three members; in 1909 they cast thirty-nine per cent of the vote and elected eighty-four members; in 1910 their vote was forty per cent of the total and they elected eighty-six deputies, including ten women. In Greece four Socialists were elected, this being their first victory in a parliamentary election.

Throughout the year the Socialists of Prussia have carried on a vigorous agitation for universal suffrage and direct election in place of the "three-class system," by which less than one fifth of the voters wield two thirds of the voting power and elect nearly all the members of the Landtag. This campaign has involved extensive strikes in various industries, the distribution of enormous quantities of literature, and the holding of popular demonstrations in all the large cities, in some of which at Berlin more than 100,000 men marched and met in the public squares in defiance of police prohibitions. The party expects to make such striking gains at the approaching Reichstag elections (which are held under manhood suffrage with direct voting) as will compel the government to concede a thorough reform of the Prussian system.

The national congress of the German Social Democratic Party, held at Magdeburg in Sept., was marked by a heated controversy over the action of the Social Democratic members of the Baden Landtag, who had formed a coalition with the Liberals and voted for the budget in consideration of promised support for social reform legislation. Some other South German delegates justified this course, but the party congress by a two-thirds vote censured it and declared that in future such an act would entail expulsion from the party. For a time it was feared that the South German members would secede, but the habit of solidarity prevailed and a split was averted. The continued increase in the cost of living, the attacks directed by employers' associations against trade unions, and the arrogant utterances of the Kaiser are all contributing to strengthen Socialism in Germany. The party's organized dues-paying membership now numbers 720,000, including 83,000 women.

International Socialist Congress.—At Copenhagen, beginning Aug. 28, was held the eighth of the new series of International Socialist Congresses, the first of which met at Paris in 1889. More than 1,000 delegates were present, among them twenty from the United States. The order of business included the following points: anti-militarist propaganda and measures to be taken by Socialists in various countries to prevent any threatened war; unemployment and legislation to be advocated by Socialists in the parliaments to reduce this evil; promotion of international solidarity in the labor unions; coöperative societies and methods by which they may be made most serviceable to the working class and the Socialist movement. At the same time and place was held the second International Socialist Women's Congress, attended by 200 delegates from twenty countries, whose most important act was a decision that Socialists should not under any circumstances support any measure extending the franchise to a part of the female sex under a property qualification, but should stand firmly for equal suffrage for all men and women.

Bibliography. — Among the hundreds of Socialist books and books about Socialism, the student will find it best to begin by consulting the following, in the order named: Morris Hillquit, *Socialism in Theory and Practice*, 1909, and *History of Socialism in the United States*, 1910; John Spargo, *Socialism*, 1909; H. M. Hyndman, *Economics of Socialism*, 1896; Frederick Engels, *Socialism, Utopian and Scientific*, 1892; Karl Kautsky, *The Social Revolution*, 1903; Thomas Kirkup, *History of Socialism*, 1906; and Robert Hunter, *Socialists at Work*, 1908.

ANARCHISM

It is a vulgar mistake to suppose that Anarchism is a more radical species of Socialism. In fact, they are diametrically opposed in theory and almost universally hostile in practice. Socialists regard political institutions as a normal phenomenon of economic evolution, and seek by political action to transform the state into an agency for the democratic administration of socialized industry. Anarchists, on the contrary, look upon state and church as twin fundamental evils, resulting from ignorance and imposture, and forming the basis for economic oppression. By a direct attack upon what they regard as political and religious superstition, and sometimes also by the use of physical force, they seek to eliminate religion and abolish the state, and to establish the complete emancipation of every individual from all legal authority and from all ethical codes except such as each individual may recognize as proceeding from the "laws of nature" and may voluntarily obey. It follows that they repudiate all political action and all permanent and disciplined organization.

Anarchists differ considerably in their conception of the ideal society and in their modes of action. They may be grouped under two heads. There are the Individualist Anarchists or "Philosophical Anarchists," as they sometimes prefer to be called, such as the Englishman Auberon Herbert and the American Benjamin Tucker, who represent the extreme development of the theories of Rousseau, Thomas Jefferson, and Herbert Spencer. In general, these are entirely unorganized, repudiate the use of violence, and have but little influence. On the other side are the Communist Anarchists. Their history begins with Pierre Joseph Proudhon (1809–65), and Michael Bakunin (1814–76), and their foremost living representative is Peter Kropotkin (born in 1842), who is also well known as a writer on geography, ethnology, and certain phases of evolution. The Communist Anarchists look for the establishment of a social order based on the voluntary organization of individuals into small local groups, conducting production by joint labor and sharing the product among the members either according to the labor performed by each or according to the needs of each; these groups entering into voluntary agreements with each other for the exchange of products and for carrying on undertakings too large for single groups to handle; but without any compulsory authority either among or within the groups, the mutual good will of individuals and their desire for the approval of their fellows being thought sufficient to maintain harmonious coöperative effort for the benefit of all.

Some Anarchists have advocated and some have practiced the "propaganda of deed"—that is, political assassination considered as a demonstration of defiance to constituted authority and as a means of intimidating and disorganizing the governing classes. Others, in both schools of Anarchism, deprecate such action as being both cruel and futile. They depend upon the spoken and printed word to spread their ideas until these shall have permeated the masses and prepared for the overthrow of artificial government and the rise of free association.

Anarchism has always been weak where Socialism was strong, as in Germany; conversely, its chief strength has been in countries where Socialism had little hold, as in Spain and Italy and, somewhat earlier, in France, Switzerland, Belgium, and Holland. In the United States it developed considerable influence in the eighties and early nineties, especially under the leadership of John Most (1846–1906). Most had been a Socialist in Germany; but becoming discouraged with the political struggle at the time of the Exception Laws, he left the Socialist Party, came to New York in 1883, and as editor of *Freiheit* waged bitter war alike against the existing social order and against the Socialist movement. He suffered many years of imprisonment in Europe and in America, but remained unbroken in spirit to the end. The principal spokesman of Anarchism in the United States to-day is Emma Goldman, editor of *Mother Earth* in New York. The most noteworthy activity of the Anarchists during the last year has been the extension of the propaganda of Francisco Ferrer, the Spanish Anarchist and Freethinker, who was shot under martial law on Oct. 13, 1909.

Experience shows that repressive measures tend to promote rather than to check the growth of Anarchism. It has the least influence and assumes the mildest forms in those countries and at those times when civil rights are most scrupulously respected, political liberty most widely extended, and the labor movement most vigorous.

Bibliography.—E. V. Zenker's *Anarchism: A Criticism and a History*, 1897, gives a fairly impartial account of the theory and movement. The Socialist criticism of Anarchism may be found in Marx's *The Misery of Philosophy*, and George Plechanoff's *Socialism and Anarchism*. The most important Anarchist books are the following: Proudhon, *What Is Property?* 1840, and *The Philosophy of Misery*, 1846; Stirner, *The Ego and His Own*, 1845; Bakunin, *God and the State*, Kropotkin, *The Conquest of Bread*, and *Modern Science and Anarchism*; Tucker, *Instead of a Book*.

XXVII. PSYCHOLOGY AND PHILOSOPHY *

J. MARK BALDWIN

PSYCHOLOGY

Psychology has in recent years shown the influence of two great movements which dominated the thought of the late nineteenth century. It has become experimental or "positive," and naturalistic or evolutionistic. The former character has shown itself in the rise of experimental and physiological psychology, the latter in that of genetic and social psychology. The two former—experimental and physiological psychology—reached their maturity a decade ago, and very recent work has been principally devoted to problems of detail.

Experimental Psychology.—The most important new departure in experimental psychology proper, has been perhaps the attempt to apply experiment to certain of the higher processes, such as attention and thought. *Résumés* of results are to be found in the books of Titchener (*Elementary Psychology of Feeling and Attention*, 1908, and *Experimental Psychology of the Thought Processes*, 1909). In physiological psychology—the study of the mind through modifications of physiological processes—the method of Pavlof has excited discussion. It consists in observing variations in the salivary secretions of animals under varied mental conditions. A detailed report of the method and results, by Yerkes and Margulis, is to be found in the *Psychological Bulletin*, vi, 1909. An able new *Textbook of Experimental Psychology* (1909) is by C. S. Myers.

Genetic Psychology.—The second great influence, that of evolution, has shown itself in the striking development of genetic psychology; especially, more recently, in researches on animals and lower forms of life. The same impulse came to its own ten years earlier in the varied work on young children. In the United States, G. S. Hall (see the successive volumes of the *Pedagogical Seminary*), and Baldwin (*Mental Development in the Child and the Race*, third edition, 1906) were early workers. A great mass of detailed facts of the child's growth were gathered, and general principles of development were sketched which have guided later investigation on adults and animals. The principle of "trial and error," according to which all acquisition or learning by the child comes through a series of more or less random and excessive discharges, directed toward the desired goal, by which "happy hits" are achieved and retained—this principle was stated and enforced by the latter writer, who utilized and criticised the theories of Spencer and Bain. The principle of imitation also received emphasis (as well by J. Royce) and its very great importance in mental development was pointed out. James dwelt upon the importance of habit (*Talks to Teachers on Psychology*, 1899). Groos (*The Play of Animals* and *The Play of Man*, both in English translation) published a theory of play—considering it as a function of practice in the animal's habits of life—which by common consent has brought into the domain of science a wide range of new facts. All this work belongs to one branch of genetic psychology.

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* The nature of these subjects is such that it is impossible to report them strictly by years, except in the most mechanical and unintelligent fashion. Philosophical ideas do not show their value generally in one year or in two. A background of description of tendencies and schools is necessary to the carrying out of the purpose of this publication, and I accordingly speak in this paper of "recent" work—giving dates as far as possible, of course—rather than of the work of 1910 only.

Animal Psychology.—The other branch, animal or comparative psychology, has developed in the last three or four years in a remarkable manner. American investigators have been conspicuous in this field. Loeb, pursuing researches on the simpler phenomena of life, published the theory of "tropisms," according to which many organic reactions are trophic ("turning")—that is, they are direct mechanical responses to stimulation from the environment and are explainable in terms of chemical action. Voluntary action is developed out of tropisms, on this theory (see the late statement in Loeb's *Die Bedeutung der Tropismen für die Psychologie*, 1909). The theory has undergone many transformations and the followers of Loeb (e. g., Bohn) study animal behavior from the point of view of the determining effect of stimulation. On the other hand, another group of investigators, pointing out the complexity of organic reactions, emphasize the inner processes, physiological and psychological, which show a certain uncertainty and lack of uniformity of procedure. Jennings (*The Behaviour of the Lower Organisms*, 1904–06) is a leader of this group, in opposition to the exclusive advocates of tropisms. A discussion between representatives of the two camps is to be found in the *Proceedings of the Sixth International Congress of Psychology*, Geneva, 1909 (see a thorough notice and criticism in the *Psychological Bulletin*, Aug., 1910).

Important American books in the field of animal psychology, appearing in the last three years are Yerkes, *The Dancing Mouse*, 1907; Washburn, *The Animal Mind*, 1908; and Watson, *Experimental Study on the White Rat*, 1903, and *The Noddy and Sooty Terns* (Carnegie Institute Publications, 1909). Much of the original work is to be found in papers in the *Journal of Comparative Neurology and Psychology*, and the *Journal of Experimental Zoölogy*, for the last few years. A good general review by Bohn and Drzewina appeared in the *Bulletin de l'Inst. Gén. Psychologique*, July–Aug., 1910. In all of this work, the theory of evolution is a common assumption, as firmly rooted as it is in pure biology, taking either a Darwinian or a Lamarckian form, usually the former (cf. the present writer's *Darwin and the Humanities*, 1909). General discussions of the animal mind are by Bohn (*La Naissance de l'Intelligence*, 1909), and Von Uexkull (*Umwelt und Innenwelt der Tiere*, 1909).

Social Psychology.—In social psychology, also, the new work has been significant. The activity of French writers in this field extends back a decade, always preserving the distinctive mark of the Positivism of Auguste Comte. The analyses contained in M. Durkheim's excellent annual, *l'Année Sociologique*, may be consulted. The newer and more refined investigations of the social *motif* appear in researches on feeling and sentiment. Ribot's theory of "affective logic" is based upon the recognition of a process of generalization and abstraction of feelings, which make them, like logical notions, in some measure socially valid and available (see the *résumé* of his own and others' publications on this subject, by M. Ribot, in the *Revue Philosophique*, 1897). If made out, this will go far to revolutionize the theory of feeling, since, on the older view, a feeling was essentially private and incommunicable (cf. the writer's articles on *La Logique de l'action*, *Revue de Métaphysique et de Morale*, July, Sept., and Nov., 1910).

Theory of Value.—Akin to this is the work on Value, of which the Austrians, led by Ehrenfels, Meinong, and Witasek, were the founders. In the United States, important books on this subject have been published by Münsterberg (*Philosophie der Werthe*, 1909, written from a formal and metaphysical point of view), and W. M. Urban (*Valuation, Its Nature and Laws*, 1909, an empirical and psychological work), both of great ability and consequence. Each of these works seeks, from its own point of view, to bring the different sorts of value—economic, moral, logical, etc.—under a common concept, and to establish general laws of the rise and development of the actual modes of worth estimation. To the empiricist, utility is the test of value; to the formalist, the standards are absolute.

With these works may be mentioned the important contribution to racial psychology contained in Wundt's *Völkerpsychologie* (1904–09).

PHILOSOPHY

Historical.—The first volume of a notable work on the history of philosophical thought in America appeared in 1907 from the pen of I. W. Riley (*American Philosophy: The Early Schools*). This work presents, for the first time, a scholarly account of the early movements of thought in America in connection with the antecedent European speculations. It draws upon many hitherto unexplored sources, and comes down to Jonathan Edwards, who is himself treated, however, somewhat too briefly. Another historical work is *The Persistent Problems of Philosophy*, 1907, by Miss M. W. Calkins.

Logic.—It is in logic, however, that the positivistic and evolutionistic movements mentioned above have worked upon philosophy; and the United States has been the field of productive logical work now esteemed everywhere. What is known as "Instrumentalism" in logic has been developed largely by American writers. By this name is known the theory of truth which is preliminary to that of pragmatism in philosophy.

Instrumentalism holds that truth is not something existing absolutely and quite apart from human life, being what it is whether known to us or not, and revealed to us by intuition or some sort of revelation in universal conceptions and axioms. On the contrary, truth is what is experimentally established as holding good in nature and life; it is the instrument of effective conduct and thought. It is accumulated gradually by the race, as the result of trial, and by the elimination of error. Its universal principles are those found to be effective; these are selected in evolution because they are useful. We know no absolute standards; there is a hypothetical strain in all our knowledge. James' essays, of various dates, collected in the book, *The Meaning of Truth* (1909); Dewey's (and colleagues') *Studies in Logical Theory* (second edition, 1909); and Baldwin's *Thought and Things, or Genetic Logic* (vol. i, 1906; vol. ii, 1908) are all works which take up the instrumental point of view. With variations, both in emphasis and in philosophical interpretation, these authors agree in combating all absolutist and *a priori* theories of knowledge and truth. They agree that all knowledge has been empirically and experimentally derived, that the tests of truth are of similar origin, and that thought is a growing system or organism, gradually built up in the progress of the race. Dewey emphasizes the instrumental character of truth to the individual who uses it to solve problems of further adjustment and control of experience (see his collected essays, 1910). James dwells upon the practical reference and utility of truth, making the "working" of a concept in practice the final test of its validity (see his work, *Pragmatism*, 1907). Baldwin emphasizes the social character, the "community," over against the privacy, of knowledge, and the external control of fact to which truth is always submitted in experimental research; and he carries this point of view through the discussion of all the principal problems of formal logic.

These variations are important for the further development of these authors' views, respectively; but for the theory of knowledge and for logic, they may all be classed properly together. "Instrumentalism" is the proper term by which to describe their common and fundamental thought. The word "Pragmatism" should be reserved for the philosophical theory built up by James and others upon this common doctrine. But pragmatism is not the only philosophical theory which is consistent with instrumentalism in the theory of knowledge.

The intellectual parentage of this point of view is easily discovered. Both the tendencies pointed out in the introductory remarks above are here at work. Positivism appears in the insistence upon the experimental method of discovery, and the denial of any royal road—by deduction, intuition, *a priori* revelation—to absolute truth. In this the British tradition of Locke, Hume, and Mill (James dedicates one of his books to J. S. Mill) is carried forward, as against the German tradition of Kant, Hegel, and Fichte. Indeed, we seem to be in the atmosphere of the English utilitarianism of the eighteenth century, as we hear the insistent claim that truth must be useful, must work, must be a "good," like money or health. The English utilitarian moralists made out their case for the rules of practice: these represent custom, social prescription, being derived from racial experience and being prescribed for individuals because of their utility as instruments of the general good. This is their account of the utterances of the "moral sense," as they called what the Germans denominated "practical reason." The same considerations, utilitarian and instrumental, we now see pressed into service in the theory of truth. Logical principles, the categories, have had, we are told, the same origin as practical principles or rules of action. They are social formulations, the instruments of our successful intercourse with nature, just as moral rules are instruments of our successful intercourse with our fellow-men.

This is in fact not a mere likeness between instrumentalism and utilitarianism, a mere similarity in point of view; it is an identity of motive and philosophical point of departure. In the future, the current instrumentalism of knowledge, worked out in the United States, will constitute the second great chapter in the historical development of utilitarianism.

On the side of the criticism of science, the ground was prepared for instrumentalism by the analyses of Mach (*Erkenntniss und Irthum*, second edition, 1906); Pearson (*The Grammar of Science*, second edition, 1909); Enriques (*Les Problèmes de la Science*, 1909, from the Italian of 1908); and Poincaré (*La Valeur de la Science*, and *La Science et l'Hypothèse*, 1902, both in English translation), an interesting series of works—German, English, Italian, and French—all demonstrating the hypothetical and experiential character of scientific knowledge, and showing the relativity of the universal postulates on which it is built up (cf. also the earlier work *De la Contingence des Lois de la Nature*, 1902, by Boutroux).

In Germany, however, this movement has been contested. A new impulse has been given to absolutism in logic and philosophy by Husserl (*Logische Untersuchungen*, 1901–02); and Meinong (*Ueber Annahmen*, second edition, 1910, and *Untersuchungen zur Gegenstandestheorie*, 1904). The work of Meinong and his pupils deserves notice, also, as an independent attempt to establish a "theory of objects," understanding by "objects" whatever the mind can entertain or think about.

Ethics.—This development of logic has in turn strengthened and refined the utilitarian ethics—a result which shows the further influence of the theory of evolution. The British utility theory did not, at least before Spencer, incorporate evolution; the modern utilitarian ethics is, on the contrary, frankly evolutionist. The recent works of Dewey and Tufts (*Ethics*, 1908), and Davies (*The Moral Life*, 1909) show this, both written by Americans. The former treats morality as a racial product; the latter considers it a thing of individual development, which concurs in direction and results with racial custom and habit. The latter is the point of view also of the present writer's *Social and Ethical Interpretations* (fourth edition, 1906). In respect to the incorporation of the results of social psychology in custom, law, and language, the important work of Wundt already mentioned, entitled *Völkerpsychologie* (1904–09) should also be mentioned.

Theory of Evolution.—The demand that both logic and ethics become thoroughly genetic shows the need of a new philosophical statement of evolution itself. The two historical points of view, naturalistic and vitalistic, have both had recent and remarkable advocacy. Vitalism is the term applied to theories which recognize some sort of vital force or inner impulse by which the course of evolution is directed, in more or less independence of the physical environment. The theory of *entelecheia* of Aristotle was its earliest philosophical statement.

There has been a strong revival of vitalism in the last five or six years, culminating in two important works of date 1907–08—*The Science and Philosophy of the Organism*, Gifford Lectures, by Driesch, and *l'Evolution créatrice* by H. Bergson. The former returns to the *entelecheia* of Aristotle, actually adopting that term; and his view is properly to be called vitalism. The latter argues that there is a real *élan vital*, a vital impulse; but does not deny the laws of interaction of organism and environment, such as that of natural selection, under which this impulse works itself out. Bergson's view is part of his system of philosophy to which I return below.

On the other hand, the antivitalistic, or purely naturalistic, point of view has had its sharper statement and fuller exposition. Besides the defense of Darwin's principle of natural selection by such eminent advocates as Poulton (*Charles Darwin and the Origin of Species*, 1909), and Lankester, the new theory of "Mutation" has been brought out by DeVries (*Die Mutationstheorie*, 1901–03; English translation). This theory supposes large variations or "mutations" to occur (for unknown reasons) in single plants or animals, and to perpetuate themselves by inheritance, giving rise to new species. It agrees in principle with Darwinism, in that it seeks the origin of species in variations; and it must be classed with the natural selection theory as naturalistic and antivitalistic. In the minds of advocates of these theories, the newer like the older vitalism lends itself to mystical and obscure interpretations of the phenomena of life and mind.

No doubt the future will see some adjustment of the respective claims of an actual dynamic movement, present in the process of evolution—the least that will satisfy the vitalists—and that of a process of selection due to interaction between the organism and its environment, as claimed by the Darwinians. Such a synthesis was suggested by the present writer in his "theory of genetic modes" (*Development and Evolution*, 1902); and the position is strengthened by the strong argumentation contained in the book of Bergson cited above. There would seem to be no reason that a really genetic or dynamic impulse—an *élan vital*—should not be dependent, in its actual development, upon the favoring conditions offered by the selection and elimination of cases or variations.

The present state of discussion of evolution in all its more scientific phases is reflected in the literature brought out by the Darwin centennial, 1909; especially in the works, *Fifty Years of Darwinism* (a collection of papers by American and English authors); *Darwinism and Modern Science* (a series of essays by authorities of all nationalities); the *Psychological Review*, Darwin Number, May, 1909; Delage and Goldsmith, *Les Théories de l'Evolution*, 1909; Baldwin, *Darwin and the Humanities*, 1909.

Philosophy Proper.—As we should expect, the tendencies mentioned above, as showing themselves in psychology, have made themselves felt also in philosophy. In the first place, the radical acceptance of evolution must result in a view of reality which recognizes its essentially dynamic and progressive character, whatever the method of its progress may actually be. This raises the question of progress or "teleology," in the form of an interpretation of the modes which reality shows in its continuous longitudinal course. It has been brought out that the mechanical view of reality is inadequate; and that some theory which allows an actual creative advance or, at least, a genuine principle of progressive organization from stage to stage of life and mind, must be worked out. Hence Bergson adopts the phrase *évolution créatrice*, and Baldwin speaks of new "genetic modes." In the development of both life and mind, we must admit that new stages—new organizations, new modes of qualitative happening—are constantly appearing. This means the acceptation of evolution in a sense so radical that no mechanical or "equational" statement (such as the law of the conservation of energy) will do justice to it.

There are, however, differences of view appearing here. No less than four interpretations of reality have had able advocacy in view of this new conception of the requirements of evolution.

Mechanical and Idealistic Views.—The mechanical theory has been revived under the name of "energetics" by Ostwald, by whom all social and psychological organization and progress are reducible to the play of the laws of energy (*Energetische Grundlagen der Kulturwissenschaft*, 1909). This joins hands with the chemicophysical explanation of life attempted by Loeb.

At the other extreme, the idealists resort to the dynamic development of experience or thought, to explain the movement of reality, recalling the genetic views of Hegel and the refined dialectical idealism of Green and Bosanquet. (The reader may consult the able papers of Creighton on "Darwinism and Logic" in the *Psychological Review*, May, 1909, and on "Teleology" in the *Philosophical Review*, January, 1910.) Such a position, in turn, allies itself with the new vitalism of writers like Driesch.

The difficulty with these two solutions is at bottom the same: they exclude movement from the final reality. One postulates a quantitatively identical energy—a material principle—and the other a qualitatively identical thought—a formal principle—while both explain the dynamic aspect of nature and mind as an aspect of incompleteness. The real is, for both these theories, after all in its relations absolute, and in its nature identical and unchanging.

Pragmatism.—Another way of treating the problem is possible; and it is more logical, since it accepts radically the principle of evolution and carries it out to its last results. This is the view called "Pragmatism" (see the definition of pragmatism by C. S. Peirce, who suggested the term, in the writer's *Dictionary of Philosophy and Psychology;* also James, *Pragmatism*, 1907; Dewey and others, *Studies in Logical Theory*, second edition, 1909; Schiller, *Humanism*, 1903, and *Studies in Humanism*, 1907; Bawden, *The Principles of Pragmatism*, and recent discussions by many writers in the *Journal of Philosophy, Psychology, and Scientific Methods in Mind*, and in other journals, for several years, to the present).

According to pragmatism, strictly defined, reality is just and only the sum of what we find true, and the true is just and only the useful series of guesses and formulas by which we conduct our life, with all its varied interests. Not only is truth instrumental to life, but further, there is no foreign, remote, or absolute reality existing apart from our apprehension and use of the true. We make reality by discovering and utilizing it. Reality is but a name for those relatively stable and "dependable" items, in the network of our experience, which recur and serve as fulcra for the levers of utility.

This is logical, considered as the outcome of instrumentalism, allied with positivism and evolutionism. It is a "radical empiricism" of knowledge, a utilitarianism of truth and morals, a cosmological evolutionism, and a metaphysical nihilism — that is, if simply taken for itself. William James' works show explicitly and fully all these modern tendencies; they have attained a currency and influence which their character, as representing the *Zeitgeist*, fits them to have.

The variations of pragmatism, or let us say, rather, of *pure* pragmatism, combined with other points of view (realistic, voluntaristic, pluralistic, æsthetic, etc.) are numerous; so numerous that the pragmatists are adopting new names to denote each the wing of the party to which he belongs. Peirce wishes to be called a "pragmaticist," Schiller a "humanist," Dewey an "instrumentalist," etc. (see Lovejoy's distinction of "thirteen pragmatisms" in the *Journal of Philosophy*, etc., 1908). The latest question on which pragmatists divide is this: "can a pragmatist be a realist?"

Confining ourselves to the consideration of the broader significance of the movement—in the practical nature of which many see a characteristically American point of view—we may weigh it in the light of the actual criticism it has received. Royce (*Proceedings Fourth International Congress of Philosophy*, Heidelberg, 1908) is able to include it as a factor in his system of absolute "voluntarism." Bradley, in articles in *Mind* (1908–10), in turn considers it a partial truth long done justice to in the development of intellectualism. So far as the apostles of the movement would themselves agree upon the psychological experience of which truth is the organ and reality is the presupposition, I suppose it would be the heart, the "passional nature," the "will to believe" (see James' *The Will to Believe*, 1897, for both these phrases).

This form of pragmatism, at least, amounts then to a philosophy in which personal passion, choice, feeling, preference, supplies the touchstone—or a touchstone—to value and validity, and it may be described as an "affectivism," taking the term in somewhat the same sense that the systems of its critics are respectively described as "voluntarism" and "intellectualism" (or rationalism). Indeed, the presence of the mystical motive—the motive to displace discursive and rational machinery by immediate and direct feeling of value—is so prominent in James' later work (see his *A Pluralistic Universe*, 1909) that it cannot fail to suggest to the reader the procedure of historical mysticism. Personally, too, James did not hesitate to show his sympathy with this type of thought (cf. his *Varieties of Religious Experience*, 1907), and temperamentally he exemplified it.

Philosophers have thus again boxed the compass. Intellect, will, feeling —rationalism, voluntarism, mysticism —each of this exhaustive trio has had its new apotheosis. In pragmatism the last two, feeling and will, join forces against the first: temper *versus* reason, will *versus* conviction, results *versus* logic—this is now the issue joined.

Stated in this way the futility of criticism from any of the traditional points of view becomes evident. One is temperamentally a rationalist or a pragmatist; and so far as the philosophical motive is concerned, pragmatism is exemplified from the start. If, then, no final result can be reached by logical reasoning, what is the critic to do? The weapon of rationalism is broken by the pragmatist before the fight begins.

Consequently criticism, taking another form, deprecates the attempt to solve the problem of philosophy by elevating one or two of the mental functions—intellect or feeling or will —to a place of high dignity and monopoly, at the expense of other functions. Who made reason more reliable than feeling, or will more potent than argument? The whole mental life—all aspects of experience—must be concerned in the apprehension and management of things, and philosophy should not disparage certain functions in order to dignify others. But it should try to discover what partial contribution each of them makes to the full meaning of the world and of man.

This issues in another—a fourth—point of view from which each of the three doctrines so ably represented in recent discussion seems partial — although partially true. Pragmatism is a revolt against the abuse of reason; but rationalism is equally a revolt against excess of passion and caprice. A logical machine would perhaps be a better guide than a weather-vane—to have in one's head! But we are not shut up to one of these. Will informed by knowledge and moved by feeling—this is what every normal man has and is, not one of these alone nor two of them. So the protest arises against dividing the personality and considering the glimpse of reality that one part gives more to be esteemed than the vision which comes from the whole.

Hence attempts to trace out the mental life as a whole, and find its issue in some mode of experience comprehensive of all the partial meaning's reality has here or there. Bradley (*Appearance and Reality*, second edition, 1897), claims that reality comes to us most fully in a state of superpersonality which lies beyond the contradictions of thought. Bergson (*Les Données immédiates de la Conscience*, sixth edition, 1910) finds in a higher "intuition," a sort of further instinct, the immediateness that logical processes lack or destroy.

Baldwin ("Knowledge and Imagination," *Psychological Review*, May, 1908) explicitly claims that in æsthetic experience the partial insights of intelligence and feeling are mutually conserved and supplemented, and the things of personal desire and worth are reconciled with the things of truth and fact. "Contemplation" would be perhaps the term best suited to express the function these writers in common have in mind. It is a mode of apprehension in which all the values of experience regarding the world, are taken up in a richer sense of self. Knowledge is instrumental to practice, and practice is instrumental to knowledge, while both serve the ends of personal feeling; and each must do its perfect work, if we would discover the full reality of the most prosaic things of life. Everything may be looked at from the point of view of æsthetic perfection.

Such a point of view has never been worked out as a philosophy, though many — among whom one thinks of the great master Lotze— have protested against the partial character of the solutions which alternately come into vogue in the progress of thought. Just now, in pragmatism, it is "the heart" that has its vogue; but the heart, too, is but part of the human person.

The net gain to philosophy, however, from recent discussion is great. The working out of motives profoundly rooted in the soil of the nineteenth century has issued in instrumentalism and pragmatism: the motives of evolutionism, scientific naturalism, social solidarity. These are enemies to absolutism, mysticism, individualism. The development, indeed, is not yet complete. Pragmatism, as so far stated by its principal advocates (James, Dewey, Schiller), is too individualistic. It hinges on private will and feeling and on utility to the individual, just as the evolution of the early Darwinians (Huxley, Romanes) dwelt upon individual struggle and prized individual utility. But for all that, never again can scholastic rationalism or logical dogmatism hold its own in the theater of public discussion. Experimental proof, utility, personal acceptability, are hereafter to be as important in a system that is to commend itself to men, as are the consistency, disinterestedness, and universality of application of the verbal propositions it comprises.

Æsthetics.—The recognition of the æsthetic experience as of value for its revelation of reality—even as being more than a sort of pleasant luxury—has been made possible by positive researches. The work on the phenomena covered in German by the term *Einfühlung* is very noteworthy. It was associated originally with the name of Lipps (see Lipps, *Æsthetik*, 1903–06, and *Weiteres zur Einfühlung*, 1905), who pointed out that in æsthetic experience there is a "reading-in" or "feeling-in" (*Einfühlung*)—a sort of projection—of the observer's personal life into the beautiful object. We find ourselves carried along with the thing we admire by a sympathetic movement of our personality. We are taken up in body and mind by the lines of a Gothic cathedral, and we imitate by incipient movements the poses of a rhythmic dance. In two ways is this seen: we go over into the work of art, joining in doing what it seems to do, sharing what it depicts; and besides this, we retain our sense of self, our personal proprietorship of the process, so that it is really an intimate movement of our own immediate self—not merely an outgo of sentimental sympathy with a thing that is really dead—that we feel. Our personality is thus advanced, idealized, perfected in the meaning with which the work of art is charged. We have a sense of identity and communion with the thing which the art impulse selects and presents.

Apart from the detailed and somewhat fanciful applications of this principle by Lipps and some of his followers (the whole thing is ably criticised by Lalo, *Les Sentiments esthétiques*, 1909), there is no doubt that the facts are new and that they justify their name: the art work is a thing of "empathy" (Titchener, Ward), of "fellow-feeling" (Mitchell), of "inner sympathy" (Groos), of "sympathetic projection" (Urban), of "semblance of personality" (Baldwin), all terms suggested by different writers as renderings of the German

Einfühlung (see Mitchell, *Structure and Growth of the Mind*, 1907; Groos, *Der Aesthetische Genuss*, 1902; Baldwin, *Thought and Things*, vol. i, 1906; Urban, article "Sympathy, Æsthetic," in *Dictionary of Philosophy and Psychology*). It brings art, in company with play, into line with the series of imaginative functions in which hypothesis and discovery, no less than personal reading and idealization, are embodied; and shows the possibility of an experience in which the barriers between "inner and outer," the self and the world, are for the time broken down. While in the state of rapt contemplation of a work of art, the spectator loses his sense of the opposition and hindrance of fact, and also his sense of embarrassment through error. He is carried away in the anticipation of the ideal in which both truth and value reach their consummation. In an important monograph, W. D. Furry has shown the possible significance in this direction of the æsthetic category for the theory of knowledge (Furry, *The Æsthetic Experience*, 1908).

Another significant recent contribution to æsthetic theory is to be found in the second part of J. A. Stewart's *Plato's Doctrine of Ideas*. Professor Stewart shows the psychological conditions of æsthetic appreciation in the imaging function.

Religion.—Psychology has made alliance with anthropology, history, and statistics for the investigation of religious phenomena as such (James' *Varieties of Religious Experience* is a documentary study of historical cases). An able discussion of the psychology of religion by Höffding, and others, is to be found in the *Proceeding of the Sixth International Congress of Psychology*, Geneva, 1909. King, *The Development of Religion*, 1910, carries pragmatic principles into the psychology and anthropology of religion.

But the final synthesis of systematic philosophical thought is also found in the treatment of religion. American philosophical works culminating in religious theory are by Ladd (his latest work being *Philosophy of Religion*, 1906), and Ormond (*The Foundations of Knowledge*, 1900, and *The Concepts of Philosophy*, 1906). Ormond's systematic work incorporates the motives of recent advance—especially the social and genetic motives—very completely; but he hardly appreciates the force of the instrumentalist position in logic. He reaches a monistic spiritualism with a leaning toward the æsthetic. The bearing of Darwinism on religion is discussed in the works cited above as brought out by the Darwin centennial.

ADDENDA

The Occult.—The phenomena of "psychic research" have had their customary exploitation and popular discussion: startling revelations having been announced at regular intervals. As usual, it is physicists mainly who have been convinced of the truth of spiritism, although certain psychologists have taken up the expectant attitude. The reader should look for himself into the works of Hyslop (*Problems of Psychic Research*, 1908), and Sir Oliver Lodge—the latter a distinguished physicist who speaks on everything from spirits to the Apostles' Creed with a positiveness inversely proportional to his authority; the former a philosopher of standing and a genuine inquirer who is convinced of the authenticity of messages from the dead. There has been so far, however, I think, no case or event so unambiguous as to carry conviction to the minds of those not already over sympathetically inclined.

Events.—The recent event of most significance in this department was the death of Prof. William James on August 26, 1910. His latest and greatest honor, coming in 1910, after a multitude of other distinctions, was his advancement to be Associate of the Institute of France. He had been Foreign Correspondent in the Philosophical Section of the *Académie des Sciences morales et politiques* for several years. At the time of his death, in the opinion of many of those competent to judge, he was the most influential philosophical thinker of the world. Other productive men who have recently been removed by death are Paulsen of Berlin (1908), and Ebbinghaus of Breslau (1909.)

The International Philosophical and Psychological Congresses met after their stated periods, the former at Heidelberg in 1908, the latter at Geneva in 1909. Their proceedings, as formally cited above, afford good indexes to the topics of current philosophical interest and discussion. The Psychological Congress voted to meet in the United States in 1913, under the following officers: Hon. President, William James; President, J. Mark Baldwin; Vice Presidents, E. B. Titchener and J. M. Cattell; Secretary, J. B. Watson. The Philosophical Congress is to meet at Bologna in the spring of 1911.

Progress in educational psychology is indicated by the foundation of two new journals—the *Archives de Pédologie* of the Belgian Pedagogical Institute, and the *Journal of Educational Psychology,* an American periodical devoted to experimental studies. An international committee has been constituted with M. Binet of Paris as chairman, to see to the introduction of the results of experimental psychology into elementary education.

Bibliography.—Besides the selected works mentioned in the text the reader will find in the *Psychological Index,* published annually by the *Psychological Review,* full classified lists of titles; see also the philosophical *Bibliography,* printed by the *Revue Néo-Scholastique.* Select references are given under the varied topics of Baldwin's *Dictionary of Philosophy and Psychology.* Other bibliographical projects not yet inaugurated include a general descriptive bibliography of philosophy undertaken by the International Philosophical Congress at the Heidelberg meeting, and a bibliography of French publications, projected by the French Philosophical Society.

XXVIII. MEDICINE AND HYGIENE

Alexander Lambert

MEDICINE AND MEDICAL DISCOVERY

National Association for the Study and Prevention of Tuberculosis.—A meeting of this association was held in Washington, May 2 and 3, 1910. Dr. Livingston Farrand, the executive secretary, reported the growth of the anti-tuberculosis movement since May 1, 1909. The number of associations for the prevention of consumption has increased from 290 to over 425; the number of sanatoriums and hospitals for the treatment of tuberculosis from 298 to 400, and the special tuberculosis dispensaries from 222 to 265. During 1909 thirty-six out of forty-three legislatures in session considered the subject of tuberculosis, and in twenty-eight bills were passed for the prevention or treatment of this disease. Since the opening of the legislative session of 1910, out of eleven legislatures in session, all considered the subject of tuberculosis and every one of them enacted some law on the subject.

The officers of the National Association are Dr. William H. Welch, of Baltimore, president; Dr. Victor C. Vaughan, of Ann Arbor, and Dr. George Dock, of St. Louis, vice presidents; Gen. George M. Sternberg, of Washington, treasurer; Dr. Henry Barton Jacobs, of Baltimore, secretary, and Dr. Livingston Farrand, of New York, executive secretary. Ex-president Theodore Roosevelt and Dr. William Osler are honorary vice presidents.

The Double Red Cross.—Although the double red cross has been used in America for more than four years as the international emblem of the crusade against tuberculosis, few people have known how it originated until announcement of the history of the symbol was made public, Sept. 29, 1910, by the National Association. The double red cross was first suggested as the symbol of the International Anti-Tuberculosis Association in Berlin in Oct., 1902, by Dr. G. Sersiron, of Paris, now associate secretary of L'Association Centrale Française Contre la Tuberculose. Dr. Sersiron's proposal was adopted at the Berlin meeting and a movement at once started to secure official recognition and protection for the double cross from European governments.

THE DOUBLE RED CROSS.

The double red cross is similar in shape to a cross used frequently in the Greek Catholic churches, and also to the Lorraine Cross of France. The National Association for the Study and Prevention of Tuberculosis in the United States has adopted the proportions of nine for the length of the cross to five for the width of the arms, with a space one ninth of the length between the arms.

In 1902, when the double red cross was adopted, there were not more than a half dozen associations for the prevention of tuberculosis organized on a wide basis. To-day, under the banner of the anti-tuberculosis crusade, associations have been formed in almost every civilized country in the world. Even China is beginning to take action along this line, while in Turkey, India, Japan, the Philippines, South Africa, Australia, Iceland, and in all of the European countries active societies are at work. In the United States, from four independent associations in 1902, the double red cross now enlists a carefully organized national movement under which are affiliated more than thirty state bodies and 420 local societies. If to these agencies are added the local, state, and national governments enrolled in anti-tuberculosis work, the double red cross becomes the symbol of the greatest organized campaign for the prevention of disease the world has ever known.

Cost of Maintaining a Tuberculosis Sanatorium. — In a bulletin issued July 21, 1910, the National Association says that the average cost per patient per day in thirty semicharitable sanatoriums in all parts of the United States is $1.669. These institutions represent an annual expenditure of over $1,300,000 and over 815,000 days of treatment given each year. The bulletin points out how the country could save annually at least $150,000,000, if indigent consumptives were properly segregated.

The food cost in most institutions represented one third of the annual expenditures. The average daily food cost per patient was $0.544. The expenditures for salaries and wages represented nearly another third, being $0.481 per day per patient out of a total of $1.669. The fuel, oil, and light cost was $0.206 per capita per diem or about one eighth of the total cost.

The daily cost in the several institutions ranged all the way from $0.946 per patient to $2.555. In the Far West and Southwest, as in Colorado and New Mexico and California the cost was higher than in the East, being $2.025 per patient as against $1.748.

The total expenditures of the thirty institutions were $1.363.953, while the total receipts from all sources were $1,548,525. More than seventy per cent of the receipts were received from public funds and private benefactions, only 28.8 per cent being from patients.

Computing that there are in the United States at least 300,000 indigent consumptives who should be cared for in charitable or semicharitable sanatoriums and hospitals, the National Association estimates that the annual cost to the country for the treatment of these persons would be $50,000,000 at the rate of $1.669 per day per patient. At the lowest estimate the country loses $200,000,000 a year from the incapacity of these indigent victims of tuberculosis. This would mean a net saving of $150,000,000 a year to the United States if all cases of consumption too poor to afford proper treatment in expensive sanatoriums were cared for at the expense of the municipality, county, or state.

International Tuberculosis Congress. —The Seventh International Congress on Tuberculosis will be held in Rome in 1911, Sept. 24th to 30th. This gathering, which meets every three years, and was last held in Washington in 1908, will be under the direct patronage of the King and Queen of Italy. The secretary general is Prof. Vittorio Ascoli, and the president Prof. Guido Baccelli. An American committee of one hundred will be appointed as the official body representing the United States.

The congress at Rome will be in three sections, that on etiology and causes of tuberculosis; on pathology and therapeutics, both medical and surgical; and on the social defense against tuberculosis.

Spitting Laws Poorly Enforced.— Anti-spitting ordinances, laws, and regulations in more than five eighths of the cities and towns of the country are not enforced as they should be, alleges the National Association for the Study and Prevention of Tuberculosis in a bulletin issued April 11, 1910. While most of the larger cities of the United States have such laws on their books, in the great majority of cases they are ignored.

The bulletin is preliminary to a more extensive study of the subject which will be presented at the next meeting of the National Association in Washington, May 3d, by Robert J. Newton, of St. Louis. It covers in detail the enforcement of the anti-spitting ordinances in eighty of the largest cities. During the year 1909 in these eighty cities 3,421 arrests were made for violation of the laws regarding spitting in public places. Over 2,900 convictions were secured and $4,100 was collected in fines.

New York City had more arrests than any other city, having had 2,513, with 2,099 convictions, and $1,936.80 collected in fines. Baltimore comes next with 214 arrests and an equal number of convictions. Pittsburg is third in rank with St. Louis fourth. In fifty-two cities out of the eighty the law was either not enforced at all or very poorly enforced.

Compulsory Notification. — Twelve states and the District of Columbia have special laws requiring the reporting of tuberculosis. Nine states require the reporting of tuberculosis by including the disease with others of a similar nature. Total, twenty-one states and the District.

Thirty-two cities have passed special ordinances requiring the reporting of tuberculosis. Fifty cities have ordinances or regulations requiring the reporting of tuberculosis, including it in the category of contagious and infectious or dangerous diseases. Total, eighty-two cities. Five cities request the reporting of tuberculosis cases.

Of the state laws now on the statute books requiring the reporting of tuberculosis, ten have been passed since Jan. 1, 1908, all of them special acts, dealing with tuberculosis only. Twelve cities have made the notification of tuberculosis compulsory since Jan. 1, 1908.

Appropriations for Tuberculosis Work.—The following is a statement of appropriations made by state legislatures, in 1909, in regular or special sessions, for fighting the increase of tuberculosis:

State.	Regular.	Special.	Total.
Alabama			
Arkansas		$80,000.00	$80,000.00
California		17,000.00	17,000.00
Colorado			
Connecticut	$50,000.00	250,000.00	300,000.00
Delaware		15,000.00	15,000.00
District of Columbia	18,775.50		18,775.50
Florida		5,000.00	5,000.00
Georgia			
Illinois		10,000.00	10,000.00
Indiana		130,000.00	130,000.00
Iowa	*55,000.00		55,000.00
Kansas		20,000.00	20,000.00
Louisiana			
Maine	15,000.00	45,500.00	60,500.00
Massachusetts	*350,000.00	45,000.00	395,000.00
Michigan	36,600.00		36,600.00
Minnesota	*25,000.00	*5,000.00	30,000.00
Missouri	*20,000.00		20,000.00
Montana			
Nebraska			
Nevada			
New Hampshire		25,500.00	25,500.00
New Jersey	*60,000.00	1,500.00	61,500.00
New Mexico			
New York	97,500.00	316,674.74	414,174.74
North Carolina	7,500.00	30,000.00	37,500.00
North Dakota		10,000.00	10,000.00
Ohio	*20,000.00		20,000.00
Oklahoma			
Oregon		20,000.00	20,000.00
Pennsylvania	2,094,500.00		2,094,500.00
Porto Rico	13,800.00	9,000.00	22,800.00
Rhode Island	52,000.00	3,500.00	55,500.00
South Dakota		10,000.00	10,000.00
Tennessee			
Texas		60,000.00	60,000.00
Washington			
West Virginia			
Wisconsin	40,500.00		40,500.00
Totals	$2,956,175.50	$1,108,674.74	$4,064,850.24

* Indicates that all or part of appropriations has been estimated.

The appropriations made in 1910, were as follows:

State.	Appropriations.
Georgia	$15,000.00
Kentucky	1,000.00 *
Maryland	175,000.00 †
Massachusetts	200,000.00
Mississippi	1,000.00
New Jersey	60,000.00
New York	100,000.00
Porto Rico	14,000.00
Rhode Island	50,000.00
South Carolina	....
Vermont	2,000.00
Virginia	25,000.00
Total	$643,000.00

* Additional appropriation to State Board of Health.

† Includes subsidy to private hospitals.

Typhoid Fever.—It is being shown more conclusively that this disease is not exclusively a food or water-borne disease. It is being demonstrated that the patient is a source of infection, the bacilli being carried by direct or indirect contact. The house fly, especially, is considered as a carrier of the infection.

Typhus Fever.—Rickets and Wilder (Dr. Rickets lost his life in Mexico while doing research work in this disease) have shown that typhus fever is transmitted by body lice (*Pediculus vestimenti*). They have shown that neither fleas nor bedbugs carry the disease, as was before believed.

Calcium Hypochlorite.—The development of the extraordinary value of calcium hypochlorite for the sterilization of municipal water supplies is one of the most valuable discoveries of the year, giving place in many instances to ozone purification. Hypochlorite is also being used very successfully to disinfect sewage after a preliminary system of purification where such disinfection is necessary either to protect water supplies or the shellfish industry.

Pellagra, a disease which was supposed to be due to the use of altered maize, and was thought, until the last few months, to occur very rarely in the United States, though extensively found in Italy, the south of France, and in Spain, has been shown to be prevalent in many parts of the United States, especially in the southern and middle western States. It is characterized by gastro-intestinal, cerebrospinal and cutaneous symptoms. The disease comes on gradually, generally in the spring. An eruption appears on the skin, sometimes weeks after the preliminary symptoms. The disease is inclined to decline during the end of the summer. It may entirely disappear in the winter to reappear in the following spring with aggravated intensity. During the course of the disease mental disturbances are common. In mild cases the disease may last ten or fifteen years. The average duration is about five. The factors in the production of the disease are probably toxins developed in the decomposition of damp maize. Pellagra occurs in children, but is most frequent between the ages of thirty and fifty. Recovery may take place upon removal to favorable surroundings, but there is apt to be permanent damage to the nervous system. In advanced cases the prognosis is bad.

Crocker Cancer Research Fund.—In the late summer of 1908 a sum amounting to $50,000 was given to the New York College of Physicians and Surgeons to aid in carrying out certain studies on the nature and cure of cancer. It was not until some time after this money had been received that the name of its donor, Mr. George Crocker, became known. This gift was the forerunner of a large bequest made to Columbia University by Mr. Crocker, who had become convinced after careful investigation of a number of universities that Columbia offered unusual opportunities for the prosecution of cancer research. In his will he directed that the proceeds of the sale of two large pieces of real estate were to be used as a fund for the study of cancer, with the proviso that should at any time the conquest of cancer be achieved, the money should become available for research in the field of scientific medicine. One of these parcels has been sold and the money placed in the hands of the trustees of Columbia University; the other is still involved in some legal complications. On the receipt of the first donation, a committee of officers of the university, consisting of Dean Lambert, and Profs. Wood, Blake, Calkins, Hiss, and Gies, was formed to draw up plans for the expansion of such work on cancer as was already being carried on by various members of the teaching staff of the university, and now that the whole sum will shortly be available, this committee is planning to extend very greatly the scope of the work and to increase the number of those prepared to devote themselves to the investigation of cancer in the various laboratories of the university. As a preliminary step, one of the members of the research staff was sent to Europe to visit the various centers of cancer study, and to report in detail as to methods of organization and equipment of those laboratories which are actively engaged in the study of malignant tumors. A similar investigation will be made in this country; and this report will then be available to furnish information as to the best direction in which research may be prosecuted, the relative proportion of income to be allotted to laboratory workers and their helpers, the cost of animals and supplies, in other words, all the technical details of research in cancer.

Besides the definite lines of experimental study on animals now in progress or planned for the future, it is also proposed to investigate as far as may be the metabolism of persons suffering from cancer, and to apply such forms of nonsurgical treatment as offer promise of checking or curing malignant tumors. It is fully realized, however, that much preliminary work must be done on seemingly unimportant lines in order to clear up many obscure points as to the power of growth and transplantability of malignant tumors; and this phase of study can be fruitfully developed only by experiments on a large scale on animals. Until, therefore, more is known about the natural history of malignant tumors, and the causes which underlie their growth and development, it will be impossible to develop a cure upon a scientific basis. There are, however, many indications that tumors of this nature may be influenced by relatively simple methods, and it is a pleasure to record the part which American physicians have played in studying the methods which apparently lead to a cure of tumors in animals and possibly also in man, by the infusion of blood or the injection of sera, either normal or derived from persons suffering from cancer. Research along these lines will, it is hoped, be started immediately, to run parallel with investigations of the purely abstract phase of the question.

Tetanus is an infectious malady characterized by tonic spasms of the muscles with marked exacerbations. It is a wound infection following trauma. After an injury the disease sets in usually within ten days. An extraordinary number of cases of tetanus have occurred in the United States as a result of injury from the toy pistol during Fourth-of-July celebrations. The *Journal* of the American Medical Association reported 415 cases in 1903, and began a propaganda against the pistol with the result that the fatalities have been reduced to seventy-two reported cases in 1910.

Several cities, including Toledo, Chicago, New York, and Boston, have employed restrictive measures whereby the casualties were greatly reduced, while other cities like Baltimore, Washington, Cleveland, and Trenton passed prohibitory ordinances, with the result that deaths and injuries were entirely prevented or reduced to the minimum. The number of blank cartridge wounds shows a correspondingly large decrease, from 1,225 in 1909 to 450 in 1910. Blank cartridge wounds form the most prolific cause of tetanus. Of the seventy-two cases of tetanus from Fourth-of-July injuries this year sixty-seven, or $93\frac{1}{10}$ per cent, ended fatally.

Ehrlich's "606."—What promises to be the greatest discovery in medical therapeutics since the first use of antitoxines, has recently been announced by Prof. Ehrlich, director of the Royal Therapeutic Institute, Frankfort. Intense professional interest is aroused over this new remedy which is the joint work of Ehrlich and his Japanese assistant, Hata. The remedy, which is called by the discoverer "606," is the result of a definite effort made by him to produce a synthetic compound which, to use Ehrlich's term, would be highly "parisitropic," for such organisms as spirocheta pallida, and at the same time be, to use Ehrlich's term again, devoid of "organotropic" activities, and so relatively harmless.

The agent has been in the hands of clinicians in many hospitals for several months, and reports are now available upon the immediate effect of it in a large number of cases. The clinical results reported agree in the experience that the injections produce remarkably favorable results.

The remedy is given by injections which may be intramuscular, intravenous, or subcutaneous. There is unanimity of opinion as to the prompt effect on syphilitic processes. Primary lesions and secondaries disappear rapidly and ulcerative processes yield even more strikingly. Similar rapid beneficial effect is observed in brain and other nervous lesions. Serious complications from the injections have been rare. Many observers report no serious by-effects even in a large number of cases.

At present the judgment as to the Ehrlich-Hata remedy must be that it produces remarkable specific effects upon the manifestations of syphilis. Whether it will fulfill all that it promises can only be determined by time.

The following advice is from the editorial columns of the *Journal of the American Medical Association:*

> Physicians should remember that this new discovery is, after all, an arsenic preparation. In the past all new arsenic preparations, though at first recommended as wonderfully active, and marvelously free from the toxic effects of arsenic, have in the end been found to possess in varying degrees the potency for harm common to this element.

The Hookworm Disease.—In *Public Health Bulletin*, No. 32, issued at Washington, Dr. C. W. Stiles writes on the hookworm disease, taking up its nature, treatment, and prevention. Hookworm disease, known technically as Uncinariasis, is caused by small round worms belonging to the subfamily Uncinariinæ. For man, two different species of hookworms are known, namely, the New World form (Necator americanus), and the Old World form (anchylostoma duodenale). The vast majority of cases in the United States are due to the New World form. At least two distinct stages must be recognized for hookworm disease, the cutaneous and intestinal stages. The young hookworm larvæ may gain entrance to the body either through the skin or by being swallowed. When they enter through the skin they cause a condition known in the South, where this disease is most prevalent, as "ground itch," "foot itch," "toe itch," "dew itch," "dew poison," etc. From the skin the young parasites wander to the intestine. Their effects upon the patient vary according to the physical condition of the latter, the intensity of infection, and perhaps according to other factors not yet thoroughly understood. The "dirt eater" represents the typical extreme case of hookworm disease, and the intensity of symptoms may vary from those observed in the "dirt eater" to cases in which the patient is not aware of any subjective symptoms, and in which the infection may not even be suspected until found by a chance microscopic examination.

It is the general experience that the hookworm patients are responsible for a high degree of the absences from school, and that they are among those who habitually fail in examinations. In a visit to North Carolina, Dr. Stiles looked into the condition of some of the cotton mills, on the occasion of a popular lecture on sanitation. The results show that nearly sixty-five per cent of the people are living under a handicap which not only involves them, but also the next generation, since forty to fifty per cent of the females of babe-nursing age are afflicted with a disease that inhibits proper nourishment for their babies, both unborn and born. Economically it is a serious loss to the mills, as well as to the workers. The mills must provide for such extra number of mill houses as will afford sufficient help, while decreased efficiency of the workmen is a direct loss.

A gift of $1,000,000 by John D. Rockefeller to fight the hookworm disease was announced at the offices of the Standard Oil Company in New York City, on Oct. 21, 1909. Prominent educators and scientists, selected in large part from institutions in the South, where the disease is prevalent, conferred with Mr. Rockefeller's representative, and the Rockefeller commission for eradication of the hookworm disease was organized. The members of the commission are:

Dr. Wm. H. Welch, professor of pathology, Johns Hopkins University; Dr. Simon Flexner, director of Rockefeller Institute for Medical Research; Dr. Charles W. Stiles, chief of the division of zoölogy, United States Public Health and Marine Hospital Service, discoverer of the American species of hookworm; Dr. Edwin A. Alderman, president of the University of Virginia; Dr. David F. Houston, chancellor of Washington University, St. Louis, Mo.; Prof. P. P. Claxton, professor of education in the University of Tennessee; J. Y. Joyner, state superintendent of education in North Carolina; Walter H. Page, editor of the World's Work; H. B. Frissell, principal of Hampton Institute; Frederick T. Gates, one of Mr. Rockefeller's business managers; Starr J. Murphy, Mr. Rockefeller's counsel in benevolent matters; John D. Rockefeller, Jr.

Vaccine Therapy.—Almost every month changes the status of treatment with vaccine, and methods of preparation and the strength of the solutions injected are almost as frequently modified. The value of tuberculin in tuberculosis in properly selected cases seems to be unquestionable. It has been demonstrated in tuberculous inflammations in the eye, larynx, and, in some instances, in the lungs. It should be carefully used in all stages of tuberculosis, especially in tuberculosis of the lungs.

A vaccine has been prepared from a bacillus supposed to be the cause of whooping-cough, and some investigators have thought they obtained benefit from such injections. The same is true of pyorrhea alveolaris; but these are still subjects for investigation.

Vaccination in pneumonia seems to have given in some instances a diminished mortality, and sometimes seems to hasten the crisis. The best results are doubtless obtained from an autogenous vaccine.

Vaccines during the course of typhoid fever seem to be of little if any value.

In the United States, England, and Germany protective inoculations against typhoid fever have been demonstrated to be of value. The protection in some instances have been found to last four years.

Shiga believes that protective inoculations against bacillary dysentery do not prevent the disease but reduce the mortality when the disease occurs.

Some investigators believe that vaccination against secondary infections, after operations under conditions or in regions of the body in which infection will almost surely occur, is advisable. Such protective injections have been made with the Staphylococcus aureus and Streptococcus, and with the Bacillus coli if the operation was on the alimentary tract. It is still a question whether such injections are advisable.

Vaccinations in pustulent acne are rather unsatisfactory. The same is true of erysipelas.

Septic infections should be vaccinated with stock vaccine and then as soon as an autogenous vaccine can be developed it should be used. The pneumococcus vaccine seems to be of most value when the pneumococcus has attacked other parts of the body than the lung, as in pneumococcic empyema or in a pneumococcic joint inflammation.

It seems now to have been sufficiently demonstrated that gonococcus vaccine is very valuable when the gonococcus has invaded joints, and especially valuable where the inflammation has been prolonged and become almost chronic. In acute infections it is of much less value.

A number of colon bacillus infections, especially when this germ has infected the pelvis of the kidney and the bladder, have seemed to have been benefited by vaccination with this germ.

Entamœba Mortinatalium. — Smith and Weidman have probably, as they suggest, established a new disease of the fetus in utero and the child in early postnatal life, in their paper describing the occurrence of an amœbiform protozoön, which they differentiate from known pathogenic amœbæ and to which they give the name *entamœba mortinatalium* (*Univ. of Penna. Med. Bull.*, July–Aug., 1910). In an additional note (*ibid.*, Sept., 1910) they refer to the discovery of very similar, if not identical, organisms in the dead-born fetus by Jesionek and Kiolemengolon (*Münch. Med. Wochenschr.*, 1904, No. 43) and by Ribbert (*Centralbl. f. allgem. Pathol.*, 1904, No. 23) in Germany, Ribbert's case dating back twenty years before the publication referred to. The descriptions of the European observers would indicate a slight difference from the organisms of Smith and Weidman, although the differences in the case of Ribbert's specimens are so slight as to make it probable that these were identical with those of Smith and Weidman. In the cases both of Jesionek and Kiolemengolon and of Ribbert the organisms were met in syphilitic fetuses, and the former suspected they had discovered the cause of lues. Neither of the Europeans attempted a certain classification of the cells, and in fact left the protozoan nature of the objects uncertainly disposed of. Smith and Weidman acknowledge that for final verification of their belief living specimens must be studied, and frankly accept the possibility that some emendation of the details of their description may thus be called out even to the extent of altering their classification. They have carefully searched the living mother as a source of the intrauterine infection, but are unable to indicate the source of the microörganisms. The entamœbæ in all of the above cases were found in the kidneys, liver, and lungs of the fetus, in places in considerable numbers, and in the latter circumstance surrounded by a minute zone of suppuration and early encapsulation. In a small bit of tissue less than a half cubic centimeter in size, six such microscopic abscesses are described by Smith and Weidman, suggesting an aggregate involvement of the entire economy of decided importance, and quite compatible with the idea that such infection may have been the cause of death of the fetus. The pathology of antenatal life is so insufficiently worked over, and the causes of death before birth so little comprehended, that this addition is of decided importance.

Corresponding Proteins.—One of the most far-reaching contributions in the field of medicinal biology is that presented by Drs. E. T. Reichert and A. P. Brown, of the University of Pennsylvania, in their volume on the *Differentiation and Specificity of Corresponding Proteins and other Vital Substances in Relation to Biological Classification and Organic Evolution*, published by the Carnegie Institution of Washington in the winter of 1909–10. The authors have shown indubitable evidence of the prevalence of the principles of the evolutional doctrine in the chemical constitution of the molecules of the substances entering into the composition of the cells of the living organism, carrying the teachings of Darwin and Wallace and their followers back from the field of gross morphology into the domain of ultramicroscopic or molecular construction. The work deals mainly with the hemoglobins, but enough is shown, and has been confirmed by further work since publication, to make it practically certain that the same facts obtain in case of the other constituent types of compounds. The writers undertook a crystallographic study of the hemoglobins from a large range of animals, with the result that constancy in the character of crystallization has been shown for each genus, while, between the crystals obtained from the blood of different genera, definite differences in the system of crystallization and in the axial ratios obtain. Differences also prevail between the isomorphous crystals derived from the blood of the different species of a given genus, in the angular mensuration, in the habit and in the mode of growth of the crystals; so that not only has it been found possible from study of the blood of test examples to determine the generic classification of the animal from which it was obtained, but in most cases to be positive as to the species. Undoubted differences, moreover, were recognized between the oxyhemoglobin and the reduced hemoglobin of the same species.

The applicability of this study is almost incalculable. If the protein molecules of a given species are constant, and it can be shown that a variation in the arrangement of their elements, without appreciable variation in their analyzed quantities, is equally constant for another species, a striking suggestion as to the origin of species is at once attained. Although the hemoglobins of such two species be analytically isomeric, we know from the study of Reichert and Brown, from their differences of crystallization and the optical properties of their crystals, that they are different, and there can be no escape from the belief that in the graphic formulæ of the two a variation of adjustment exists, just as a similar explanation underlies Pasteur's lævogyric and dextrogyric tartrate crystals. Such readjustments may often occur without impairing the vitality of the molecule, but modifying materially its anabolic and catabolic products, with sufficient change in the aggregate, if the same modification run through a sufficient number of molecules and cells, to determine a mutation, to be perpetuated as a new species if in harmony with the environment. With no strain whatever the same line of reasoning would fittingly explain the differentiation of cells and organs in the developing being; is suggestive in the question of sex differentiation; can readily be applied to the problem of tumor development, gives a rational explanation of heredity; of the influence of food and environment upon the individual; and a harmonious and satisfying confirmation of Ehrlich's "side-chain theory" of immunity—to say nothing of the evident applicability of the study to medico-legal questions, the opportunity of utilizing it in deciding moot questions in systematic classification both in animals and in plants, and the very real contribution it embodies for general crystallography.

SURGERY AND SURGICAL DISCOVERY

In the line of surgery and surgical discovery many important procedures are being worked out. However, there are comparatively few procedures regarding which definite announcements can be made.

During the past year thoracic surgery has seen considerable development due to the use of the positive and negative pressure chambers of Sauerbruch, Bauer, and Meyer, and the intratracheal-insufflation method of artificial respiration of Meltzer and Auer. By either of the above methods operative procedures upon the lungs, esophagus, etc., may be carried out without the dangers incidental to collapsing of the lungs. Negative pressure chambers have been used to prevent hemorrhage in operations upon the brain, the body being inclosed in the pressure chamber, the pressure lowered and the blood thus drawn from the cranial region, and the atmospheric pressure acting on the uninclosed head being sufficient to stop bleeding from small vessels.

The year 1910 has seen the development of operations for tumors of the hypophysis and for acromegaly, to justify the statement that the removal of tumors of that region has been brought within the scope of modern surgery.

The treatment of bone sarcoma by the removal of the tumor and autoplastic bone transplantation to replace the defect, instead of amputation, has become the method of the year. Bone cysts and some varieties of bone tumors due to radiographic study and pathological analyses are now treated by curetting and the removal of the involved tissue.

A new method of end-to-end intestinal anastomosis by invagination has been devised by Gibson.

Local anæsthesia of the extremities by the injection of cocain into the main artery of that extremity has been reported by Ranshoff.

A most ingenious and important discovery is the treatment of ectopia vescicæ by means of implantation of the ureters in the cæcum, in which procedure the cæcum takes on the work of the bladder, and the appendix is so fixed as to act in the capacity of the urethra.

The question of internal secretion of the ductless glands is being worked out, and the relation of the adrenals to the pancreas and to the thyroid has been pretty well established.

Transfusion of blood from the healthy to the diseased individual has become more perfect in its details. The vein-to-vein anastomosis is growing more steadily in favor.

MENTAL AND NERVOUS DISEASES

Neurology.—The *Zusammendes Referat*, of Edinger, which has just appeared, brings the anatomical data of neurology to date.

While it is impossible to pick out the most important of the anatomical bits of work, special attention is due to the studies of Brodmann upon the cellular architecture of the nervous system, which he has presented in book form after several years of minute investigation. It may be said that Brodmann's work with that of Käs, of Vogt, and of Campbell now establishes a brain topography in which every region of the brain structure has yielded up, so to speak, the intimacies of its cellular structure. The brain now has no unknown areas, and with the foundations laid, pathological research has now a substratum of enduring value upon which to work. The researches of Jacobsohn on the spinal cord and brain stem carry a knowledge of cellular topography down the entire cerebro-spinal axis, while the most recent masterly study of Malone upon the thalamus does the same for this midbrain organ. In this same region the work of von Monakow on the red nucleus stands out as of special significance. He has studied this organ and its connections from the anatomical and pathological view points and has brought a flood of light into an area of which practically very little has been known.

Passing from the anatomical to the physiological fields, Bechterew's large volumes serve to accentuate our present-day position in regard to nervous physiology. The problems are so numerous as to defy even their mention; but from the practical standpoint, at least, the study of labyrinthine function as furthered in the hands of Barany, of Cyon, and those workers upon the cerebellar tracts connected with the vestibular system is most important. Lewandowsky's new *Handbook of Neurology*, promises to be something of more than usual merit.

Thomas, and the English investigators, Horsley and others, are giving important helps in the study of ataxias of uncertain origin. The work being done upon the cerebellum by Horsley and his coworkers promises to be fundamental, and will establish more firmly our knowledge of both the anatomy and physiology of this organ.

Rothmann, of Berlin, has repeated Goltz's famous brainless dog experiment, and already has contributed several studies on cerebral physiology of unusual merit.

It is not to be expected that the aphasia question as upturned by Marie should remain undisturbed. After the dust of the controversy has settled it seems established that Marie's main contentions have been shown to be false, while von Monakow occupies a somewhat middle position in the controversy, advancing his diaschisis theory to balance all of the difficulties. The majority of investigators seem to fall back upon the general principles of the older contentions, as modified from time to time.

Psychotherapy.—An interesting feature of American psychiatry has been the great interest taken in psychotherapy and more particularly in the Freud brand. Since this brilliant scholar gave a series of lectures at Clark University a year ago, there has been a gradual diffusion of the Freud doctrines throughout the United States, which has been furthered and extended in the studies of White, Jones, and Brill, and given more permanent forms in the monograph translations edited by Jelliffe and White.

Wassermann Serum.—The study of the relations of syphilis to diseases of the nervous system has taken a greatly renewed activity since the introduction of the Wassermann serum diagnosis for syphilis. The old dictum "no syphilis no paresis" seems to receive more and more confirmation with increasing perfection of the Wassermann technic, and the same holds true for tabes dorsalis. Many very obstinate neuralgias, headaches, concealed cerebral tumors, obscure cord conditions, feeble-minded intellectual states, etc., are being cleared up by means of this objective test, that bridges over anamnestic defects which have concealed the true nature of things. The differentiations of cerebral syphilis from true paresis seem to have been objectively effected and a host of obscure problems that seem insolvable have suddenly received light.

Epidemic poliomyelitis (*Infantile Paralysis*) has claimed many victims within the past three years and was present in epidemic form over a large area of the United States during 1910. The investigations of the New York epidemic of 1907 by the joint committees of the New York Neurological Society and the pediatric section of the New York Academy of Medicine present all that is known concerning this disorder.

The disease is found to be more prevalent in cold than in warm countries, and more cases have been reported from the northern part of the United States than from any other part of the world. Strictly speaking, the term "acute poliomyelitis" signifies acute inflammation of the gray matter of the spinal cord. More recent investigation, however, has established the fact that the lesion in the cord is not limited to the gray matter, but that in the more severe type of inflammation similar lesions may also be present in the gray matter of the medulla, pons, and even the cerebrum. This disease is characterized by an acute onset, generally with fever, by early and usually extensive loss of power, followed by gradual improvement and in some cases complete recovery; but more often there is left some permanent paralysis in certain groups of muscles which undergo rapid and marked atrophy. It is generally seen as a sporadic disease, but from time to time in epidemics. As it occurs most frequently in very young children, and as it is altogether the most common form of paralysis at this period, the old term of acute infantile paralysis has proved the most appropriate designation. Previous to 1907 there have been recorded at least thirty-five epidemic cases of acute poliomyelitis. Boys are more frequently affected than girls. The onset of the great proportion of the cases is in summer. In 566 sporadic cases the paralysis developed during the first year in twenty per cent; during the second year in thirty-eight per cent; during the third year in twenty-two per cent; and, after the fifth year, only five per cent. These figures of eighty per cent for the first three years are also true of epidemic cases.

Acute poliomyelitis has been reported as a sequel of almost every acute disease occurring in very early life. Epidemic poliomyelitis has within three years become a common and widely distributed disease in the United States. Prior to 1907 the epidemic disease occurred very rarely in this country. Since 1907 it has prevailed from the Atlantic to the Pacific Ocean, and probably few states have entirely escaped its ravages.

Studies especially devoted to the question of the mode of spread of poliomyelitis, have been conducted with unusual energy within the last few years, and would seem to have established contagion as highly probable. Particular attention should be drawn to the research work by Dr. Simon Flexner, who has shown that the disease is apparently due to a living contagion, and is communicable; that infection occurs through the upper air passages; that the cause is apparently a lower form of life which is ultra-microscopic, and, notwithstanding this, the way to the preparation of a curative serum is now open.

PUBLIC HEALTH

Quarantine.—As a rule quarantine stations remove from incoming vessels for isolation and treatment only the first group of infectious diseases, i. e., smallpox, cholera, plague, typhus, and yellow fever. Other infectious diseases, such as scarlet fever, measles, and diphtheria are allowed to proceed with the vessel and be cared for by the local board of health at the point of destination.

The New York Quarantine Station now removes from incoming vessels all cases of infectious disease. It is believed that this measure offers greater protection to the public health in general, and individually to the patients involved than where this service is separated. This regulation also diminishes the annoyance, loss of time, etc., to commerce. It has become better understood that the complications of measles, scarlatina, etc., render the mortality of these diseases greater than that of some diseases of the first class. The most efficient method to prevent the propagation of infectious disease is careful isolation.

The character of the inspection of incoming vessels at the New York Quarantine involves an exhaustive examination of the passengers and crews. Neither the visual examination of these persons nor their statement, or that of the ship's captain or surgeon is accepted in lieu of a personal inspection. The inspection includes the use of the clinical thermometer, the examination of the superficial glands in instances where plague is suspected and other means designed to detect mild, ambulant, or irregular cases — a most dangerous factor in the transmission of infectious diseases. Where cholera and other intestinal diseases are suspected examination of rectal smears, etc., are made as an aid in diagnosis. This has proved of great aid in establishing a proper diagnosis of infectious diseases, particularly of a mild or irregular type.

Cholera.—The recent cholera outbreak in Europe has furnished reliable proof that former theories regarding the period of incubation of this disease and the character in which it appears are more or less erroneous. It has been shown that the incubation may extend over a period of weeks, and that the disease may occur in a very mild or irregular form. The outbreak has also furnished evidence of the existence of cholera "carriers," who may either show no evidence of the disease whatever or symptoms present themselves only when an intestinal stimulant is applied sufficiently powerful to make active the dormant cholera organisms which are present in the intestinal tract.

The importance of this knowledge relates to the fact that quarantine must not be relied upon to extend full protection against the entrance of this disease into seaports, principally for the reason that it is impossible to determine the maximum period of incubation of the disease; and it would be of doubtful protection as well as impracticable and unjustifiable to hold persons who have been exposed to cholera or are from cholera-infected ports for a period which is dictated entirely by theory. A detention of more than five days, the period within which typical cases usually occur, is not in accord with modern sanitation. Every community through efficient and practical health officers should be prepared to detect cholera either in a mild or typical form, and also to understand that the disease may be transmitted by "carriers." In the absence of general infection either on shipboard or on land, cholera, if early detected, is soon brought under control, and so far as the extension of the outbreak is concerned no serious results should follow. Either general ship infection or a general infection on land, which means almost always a contaminated water supply, reflects seriously on those responsible for health on shipboard or on land.

A National Department of Health.—Hon. Robert L. Owen, of Oklahoma, introduced in the United States Senate, Feb. 1, 1910, a bill to establish a department of public health under the supervision of a secretary of public health, to be a cabinet officer at a salary of $12,000 per annum, with like tenure of office of other cabinet officers.

Section 4 provides that the secretary of public health shall have supervision over the department of public health, and shall be assisted by an assistant secretary of public health, to be appointed by the President, by and with the advice and consent of the Senate, at a salary of $6,000 per annum.

Section 7 provides that it shall be the duty and province of the department of public health to supervise all matters within the control of the Federal Government relating to the public health and to disease of animal life.

Section 8 provides that it shall gather data concerning such matters, impose and enforce quarantine regulations, establish chemical, biological, and other standards.

Section 9 provides that the secretary of public health shall establish a bureau of biology, a bureau of chemistry, a bureau of veterinary service, a bureau of sanitary engineering, reporting such proposed organizations to Congress for suitable legislation relative thereto.

There has been much discussion in the scientific and secular press regarding the proposed measure. Several congressional committee meetings have been held at which those favoring and those opposing the measure were heard.

The government is already doing a large amount of excellent health work. Its efforts are scattered and more or less duplicated; and, in the interest of economy and of effective ultimate results, it is the idea of Sen. Owen to unify the various medical bureaus so far as practicable, bringing them under one general supervision.

MEDICAL EDUCATION

American medicine is now well along in the second century of its history. In the earlier period a young man who desired a medical career was apprenticed to some reputable practitioner, and after one, two, or possibly three years actually took part in the daily practice of his preceptor —possibly after passing an examination before a county medical society. State laws governing the practice of medicine have from time to time been passed in the different states, but without uniformity. These laws have become more strict from year to year, until at the present time many states require an examination before a state medical board for a license after a student has taken his college degree, and in some states a medical student's certificate, granted by the state, is required before one is allowed to enter upon the regular study of medicine in a medical college.

During the past year the number of medical colleges has decreased, and also the number of students. At the present time there are in the United States 155 medical colleges with 23,927 students. In 1910 a large number of colleges increased their entrance requirements from a high-school diploma to a first-year college diploma, including chemistry and a foreign language.

The number of our medical schools is greater than that of all of the rest of the civilized world together. Nearly all American medical institutions have incomes below $10,000. The report on medical education in the United States and Canada, published by the Carnegie Foundation, shows that in both countries there are only twenty-three medical schools having a total annual income of more than $50,000. Of these only three have an annual income of over $200,000.

A stage of medical education is now coming into existence in this country in which the hospital will be recognized as the supreme laboratory of the medical school.

St. Louis Medical College.—It was announced April 29, 1910, that plans had been accepted for establishing in St. Louis a medical college of the caliber of the Johns Hopkins in Baltimore, to be connected with Washington University. A fund of about $5,500,000 is to be applied to the erection of buildings and to the enlarged endowment of the school. Requirements for entrance are to be raised at once to those for entrance to Johns Hopkins, which are a high-school training, and the completion of the freshman and sophomore years at a college in proper standing. Among the buildings to be erected are research laboratories and hospitals.

Rockefeller Institute Hospital.—On Oct. 17th a new hospital attached to the Rockefeller Institute for Medical Research was opened. It was announced that John D. Rockefeller had given $3,820,000, to be added to the endowment of the institute. This makes a total endowment in properties and money of $8,240,000, with an actual income-bearing endowment of $6,420,000. There are accommodations for seventy patients, who will be treated free of charge. No experiments will be made upon any of the patients. For the accommodation of these seventy patients there is an eleven-story modern structure fitted out with the latest hospital improvements. It was announced that for the first time the board of trustees, contemplated by the charter, had come into being, and taken possession of all the property of the institute, thus establishing it perpetually on an independent foundation.

The board of trustees is initially constituted as follows: John D. Rockefeller, Jr., Frederick T. Gates, William H. Welch, Starr J. Murphy, and Simon Flexner. The trustees hold the entire income at the disposal and under the full control of the board of scientific directors. Of these Dr. Welch is the president. The others on this board are: Drs. T. Mitchell Prudden, L. Emmett Holt, Christian A. Herter, Simon Flexner, Herman Biggs, of New York, and Dr. Theobold Smith, of Boston.

NURSING

Nursing for Insurance Companies.—An interesting development in nursing is the establishment of groups of visiting nurses by the life insurance companies for the purpose of visiting families in which there are sick people, with the idea of shortening, by skilled nursing, the period of illness and thus lessening the demand upon the company. Nursing of this nature is established in thirty or forty of the larger cities, and seems to have passed the experimental stage.

Preventive Work.—In this particular field there have been rapid developments during the past few years, as shown by a book entitled *District Nursing,* by Yssabella Waters. Nurses are now assisting in medical inspection in public schools in most of our large cities and in many of the smaller ones, under the direction of the boards of health or the boards of education, either of the city or state (the State in Pennsylvania).

A large number of nurses are engaged in educational work in tuberculosis. They do a certain amount of nursing, but their chief work lies in instruction as to methods of prevention.

In connection with the efforts toward the prevention of infant mortality, nurses are taking active part and are found in most of the milk stations directing the distribution of milk, instructing mothers, and visiting them in their homes. They are also at work in the welfare departments of factories and department stores.

Education. — Laws governing the education and professional practice of nurses have now been enacted in twenty-four states, and in New York and California their registration is under the control of the regents of the State University. These laws provide for boards of examiners and undertake to establish a minimum standard of education and training, and to have something to say as to conditions under which it shall be carried on.

Nursing of Nervous and Mental Diseases.—A new interest is being aroused in the nursing of the nervous and the insane, and opportunities are given in many insane hospitals for the training of nurses in this important branch. In New York City a psychological clinic, recently opened, is one of the newer institutions for the treatment of nervous diseases. It will undoubtedly offer an opportunity for giving nurses training and experience beyond that which the ordinary hospital offers.

Occupations for the Sick.—An exhibit was held in the City of New York last May in the Educational Museum of Columbia University in which several institutions exhibited work from all classes of patients. This shows that special interest has been aroused in the study of occupations for the sick. This is among the newer advances in nursing as well as in medicine.

Army nursing has been organized for some years, but quite recently the navy decided to establish a department of navy nursing, which has been done, in each instance placing a nurse as superintendent of the nursing corps.

Nursing and Health.—Some time ago there was established in connection with the Teachers College of Columbia University a department of household arts. On Dec. 3, 1909 announcement was made that Mrs. Helen Hartley-Jenkins had endowed a postgraduate course for the training of nurses at the Teachers College. This department is now called Nursing and Health, and is in charge of Miss Adelaide Nutting, professor of hospital economics in the Teachers College, formerly superintendent of the Johns Hopkins Training School for Nurses in Baltimore.

United Nurses Societies.—There was held in the City of New York in May a very large and important meeting of the United Nurses Societies, which have a membership of 20,000. Five hundred delegates were in attendance, representing every state in the Union and Canada as well. It was said at this meeting that the number of graduate nurses in the United States today was 75,000.

Main topics discussed were, the problems of training-school management, of training the teacher and supervisor, and of organization and arrangement of courses of study and practical work. Two other important subjects were, the child in the hospital and its care, and occupations for the sick and convalescent. There were papers and discussions devoted to the general field of work of the graduate nurse. Almost an entire session was given over to a consideration of the peculiar problems to be met in private nursing in families. District nursing, nursing tuberculosis, and in almshouses were considered in a series of interesting reports and papers, showing good work done and better in prospect. Able papers on the care of the insane testified to the awakening realization of this long overlooked aspect of nursing.

Florence Nightingale, sometimes called the founder of the profession of nursing, died in London, Aug. 13, 1910, in the ninety-first year of her age. Miss Nightingale was born May 12, 1820, in Italy, near the City of Florence. Her home, however, was in England, and there she grew into girlhood and womanhood. She spent her young womanhood in studying hospital conditions at home and abroad. As a great reformer of unsanitary conditions in the English army and hospitals, she pioneered a movement which spread to all countries, and to her must be credited the modern system of military hospitals. It was the Crimean War that brought Miss Nightingale a measure of fame granted to few women, for after her work in Crimea no civilized nation has ventured on war without properly preparing for the care of its sick and wounded.

VITAL STATISTICS OF THE UNITED STATES

CRESSEY L. WILBUR

The Registration Area.—It is only for a comparatively short time that the United States has possessed regular annual reports on vital statistics corresponding at all to the national vital statistics compiled by almost all other civilized countries. Even yet the returns are restricted to deaths from the "registration area," embracing a little more than one half of the total population of the United States (55.3 per cent), and to a provisional registration area for births of much smaller size. This is due to the fact that the conduct of registration of vital statistics is exclusively a state or municipal function, and that the Federal Government has no authority to pass or enforce laws providing for the registration of births and deaths. It must accept the results of state or municipal registration and is perforce constrained to derive its data from only those states and cities in which laws of suitable character have been enforced properly, so that the results are of statistical value. The states included in the registration area for deaths for the year 1909, as shown by the census bulletin for that year, were as follows:

California.
Colorado.
Connecticut.
Indiana.
Maine.
Maryland.
Massachusetts.
Michigan.
New Hampshire.
New Jersey.
New York.
Ohio.
Pennsylvania.
Rhode Island.
South Dakota.
Vermont.
Washington.
Wisconsin.

In addition to the states above, returns of deaths were received from fifty-four cities in nonregistration states, as for example, Chicago, Springfield, and several other cities in Illinois, and for the District of Columbia which is coterminous with the City of Washington.

Births.—For the year 1908 a collection of all the births registered in the United States by either state or city authorities was made, and it was found that for a very large proportion of the areas represented, the results of the birth registration laws were worthless, chiefly through lax enforcement. A provisional birth registration area, from which returns of births for the years 1909 and 1910 are being obtained by the census, consists only of the six New England states, Michigan, Pennsylvania, the City of New

York, and the District of Columbia; and it is doubtful whether for some of these states the minimum limit of completeness (only ninety per cent, or a loss of one birth in ten) has been reached. In fact, the city of Boston, whose registration of births is stated to be the best of any in the United States, claims only ninety-six per cent, and few cities much exceed the ratio of ninety per cent. One of the best cities in this respect is New York, where for some time past, strenuous efforts have been made by the Registrar of Records to bring up the completeness of birth registration; but the accuracy of registration for New York has been so low until within recent years that no reliable rates of infantile mortality are available. (Infantile mortality is the ratio of deaths of infants under one year of age per 1,000 births, and is a most important aid to the practical sanitarian in the reduction of infant mortality.)

The United States census is that part of the Federal Government immediately concerned with the compilation of vital statistics. The subject was first included in the census schedules of the seventh census (1850), and occurs in those of each of the censuses from the seventh to the twelfth (1900). Reports on vital statistics were prepared, based largely on the results of enumeration of deaths by the census enumerators at the time they were taking the census of population. This method was a very unsatisfactory one for vital statistics, because the events of birth and death cannot be obtained with accuracy except by immediate registration, that is to say, very shortly after the time when they occur, and in the case of deaths before any disposition is made of the body; this requirement is assured by means of the burial permit.

Beginning with the census of 1880, therefore, the results of registration under state laws and city ordinances were substituted as far as possible for the imperfect enumeration, and the original registration area for deaths was constituted for that year. It embraced only the states of Massachusetts and New Jersey, together with certain registration cities in nonregistration states, and the aggregate population was only 8,538,366 or seventeen per cent of the total population of the United States in that year.

For the last year (1909) for which reports have been prepared, the registration area included an estimated population of 48,776,893 or 55.3 per cent of the total population of continental United States. Much of this growth has occurred since the twelfth census (1900), and, more particularly since the organization of the census office upon a permanent basis (1903). Such organization enabled the census to assume a directive relation toward the development of registration laws, and by intimate coöperation with the state authorities and with national associations, such as the American Public Health Association, the American Medical Association, and the American Statistical Association, which are interested in the improvement of our vital statistics, to aid greatly the movement for better registration laws and more thorough enforcement of them in this country.

There were in 1900 only ten registration states:

Connecticut.
Indiana.
Maine.
Massachusetts.
Michigan.
New Hampshire.
New Jersey.
New York.
Rhode Island.
Vermont.

To these were added in 1906, California, Colorado, Maryland, Pennsylvania, and South Dakota; in 1908, Washington and Wisconsin, and in 1909, Ohio. Other states have passed laws which are now undergoing the test of actual experience, or will shortly be in force. Among these are: Delaware, Minnesota, Missouri, Montana, Nebraska, North Carolina (municipalities of 1,000 population and over), North Dakota, Oregon, and Utah. Kentucky has adopted a law in effect Jan. 1, 1911.

All the recent laws have been based largely upon the model law originally recommended by the census in its pamphlet on *Registration of Births and Deaths*, and which has since been indorsed by the American Medical Association and the American Public Health Association. The laws in force in Pennsylvania, Ohio, and Missouri are applications of this model law; and many other states, especially those of the South, are coming forward with efforts to secure such legislation. There is also a marked tendency to require more effective enforcement of birth registration laws, as evidenced by the recent report of an advisory board of the health department of the City of New York to the effect that the most important measure for the improvement of the vital statistics of that city was:

1. Verification of the birth registration of every infant dying under one year of age in order to detect omissions.
2. Strict enforcement of the law providing a penalty for an omission to record a birth in every case thus brought to light.

Standardization.—In addition to the extension of the registration area by the enactment and enforcement of better registration laws, an important part of the work of the census is the standardization of the work in vital statistics now being performed by the states and cities; and its corelation with the similar work undertaken by the Federal bureau. At the base of this effort lies the adoption of a uniform system of schedules, which has been obtained by the preparation of a standard certificate of birth and a standard certificate of death, and their adoption, not only by the census for its official transcripts, but by the registration officials of the United States represented in the section on vital statistics of the American Public Health Association, as the blank to be used in all states and cities. Only a few years ago no two states or cities agreed in the forms of certificates in use, while at the present time nearly all the registration states have adopted the standard form. The few states that have not yet acceded are registration states which have long had blanks in use giving the essential particulars, and which on account of office equipment or other reasons have not yet made the change; but the time of complete uniformity in this respect will soon arrive.

Another most important matter is the preparation of uniform standard tables, so that the most essential data can be obtained without difficulty in any registration report. Committees of the American Public Health Association and American Statistical Association are coöperating with the census for this purpose, and a pamphlet on *Uniform Tables for Vital Statistics and Methods of Statistical Work in State and City Registration Offices* is now in preparation.

The International Classification.—Another most important matter in which the work of the census has not only enabled all the vital statistics of the United States to be placed upon a basis of uniformity, but has also contributed greatly to the attainment of uniformity throughout the world, is in the adoption of the International Classification of Causes of Death. This was used by the census in the report for the calendar year 1900, beginning its series of annual reports, and has been adopted by all the registration states and nearly all the registration cities of the country. The adhesion of the United States to this classification determined practically its acceptance by many other nations; and at an international commission, held at Paris, July, 1909, in which the United States and twenty-five other countries participated, the decennial revision of the classification, containing many recommendations by American registrars and physicians, was adopted for use during the ten years beginning with Jan. 1, 1910.

The importance of the proper statement of cause of death by the physician, as a basis of mortality statistics, is apparent. The problem of compiling returns in a uniform manner has been solved by the adoption of the international classification, and a committee of the American Medical Association, coöperating with the census and other departments of the government, is now engaged upon a complete nomenclature of diseases which physicians may use for reference in designating diseases upon their returns. As a help to precision in this respect, the census has published a *Physician's Pocket Reference to the International Classification of Causes of Death*, which is distributed to all physicians in the United States.

Birth and Death Rates.—Statistics of birth and death rates in the United

States and in foreign countries appear in Departments I and II. The following tabular statement of the death rates in the United States and principal countries from certain of the more important causes of death is compiled from the report of the registrar general of Great Britain, 1908:

DEATH RATES PER 100,000 PERSONS LIVING, FROM CERTAIN IMPORTANT CAUSES OF DEATH, 1901 TO 1908.

Country.	Annual Average, 1901 to 1905.	1906.	1907.	1908.	Annual Average, 1901 to 1905.	1906.	1907.	1908.
	Typhoid Fever.				*Diphtheria and Croup.*			
Austria	19.5	15.0	[1]	[1]	43.5	33.5	[1]	[1]
Belgium	16.8	12.3	11.9	[1]	21.5	16.6	15.6	[1]
England and Wales	11.2	9.2	6.7	7.5	[7] 20.4	[7] 17.7	[7] 16.4	[7] 15.8
Holland	[2] 8.7	[2] 8.0	[2] 6.5	[2] 6.3	[7] 9.6	[7] 6.3	[7] 6.2	[7] 6.3
Hungary	28.3	27.1	26.4	24.3	46.7	35.1	34.8	44.7
Ireland	13.1	9.0	8.3	7.7	[7] 8.1	[7] 8.0	[7] 6.5	[7] 8.5
Italy	35.2	28.1	25.5	27.2	13.8	12.4	16.7	17.4
New South Wales	21.5	17.9	12.2	19.3	[7] 8.4	[7] 6.6	[7] 8.6	[7] 7.7
New Zealand	7.9	5.4	5.8	9.5	[7] 4.5	[7] 3.9	[7] 6.0	[7] 3.7
Scotland	11.4	8.5	7.7	[1]	[7] 14.7	[7] 16.9	[7] 14.1	[1]
Spain	44.1	41.3	34.8	[3]31.9	24.9	17.3	18.5	[3] 19.9
Sweden	[4] 8.6	6.3	6.3	[1]	33:8	21.6	15.6	[1]
Switzerland	6.2	4.8	5.0	[1]	21.2	14.8	15.0	[1]
United States (registration area)[5]	32.2	32.1	30.3	25.3	29.7	26.3	24.3	22.3
	Smallpox.				*Tuberculosis of Lungs.*			
Austria	0.1	0.1	[9]	[1]	339.9	314.5	[1]	[1]
Belgium	9.9	0.6	0.8	[1]	118.2	105.6	100.8	[1]
England and Wales	2.5	0.1	[6]	[6]	121.5	115.0	114.0	111.7
Holland	0.2	0.1	0.1	[6]	133.4	133.7	129.7	119.5
Hungary	2.3	1.1	0.7	0.6	[8]393.8	[8]384.2	[8]384.1	[8]370 1
Ireland	0.3		[6]		215.3	203.6	201.7	194.7
Italy	9.4	0.5	1.3	1.6	[9]114.9	[9]148.8	[9]124.3	[9]121.8
New South Wales	0.1				80.2	66.5	61.8	63.5
New Zealand	[6]				69.9	62.1	66.6	64.2
Scotland	2.6	[6]	[6]	[1]	144.5	137.3	134.3	[1]
Spain	22.3	22.4	16.6	[3]14.2	146.4	141.3	137.6	[3]134.6
Sweden	[6]			[1]	[1]	[1]	[1]	[1]
Switzerland	0.5	0.4	0.2	[1]	188.6	183.5	172.0	[1]
United States (registration area)[5]	3.4	0.2	0.2	0.2	169.9	159.4	158.9	149.6
	Measles.				*Cancer.*			
Austria	34.2	33.0	[1]	[1]	74.2	77.6	[1]	[1]
Belgium	36.8	34.0	27.5	[1]	[10] 57.8	58.5	60.1	[1]
England and Wales	32.6	27.3	36.1	22.7	86.5	91.7	90.8	92.6
Holland	37.0	24.9	25.9	27.2	97.4	100.7	101.8	102.8
Hungary	40.3	48.6	41.7	44.7	38.8	40.4	42.0	43.4
Ireland	16.1	8.8	13.3	19.6	68.6	79.3	76.3	75.8
Italy	21.2	29.0	24.2	34.1	55.1	61.3	61.2	64.0
New South Wales	3.0	1.1	5.8	2.0	64.2	67.8	69.8	66.6
New Zealand	7.3	1.3	11.0	2.0	67.4	69.6	73.3	69.5
Scotland	32.1	30.6	24.1	[1]	83.9	95.4	95.3	[1]
Spain	66.0	44.5	34.8	[3]36.3	44.3	47.0	46.9	[3] 50.3
Sweden	8.2	3.7	8.2	[1]	[1]	[1]	[1]	[1]
Switzerland	19.5	16.3	17.4	[1]	129.7	131.6	125.2	[1]
United States (registration area)[5]	9.1	12.4	10.3	10.2	68.3	70.8	73.1	74.3

Country.	Annual Average, 1901 to 1905.	1906.	1907.	1908.	Annual Average, 1901 to 1905.	1906.	1907.	1908.
	Scarlet Fever.				*Diarrhea and Dysentery.*			
Austria	45.4	38.3	[1]	[1]	[11]	[11]	[1]	[1]
Belgium	13.1	10.8	12.7	[1]	114.5	129.4	98.3	[1]
England and Wales	12.6	10.1	9.2	8.0	67.8	88.5	30.5	52.2
Holland	2.7	2.8	4.7	5.2	145.6	139.1	90.2	128.6
Hungary	66.2	43.4	57.2	65.4	[1]	[1]	[1]	[1]
Ireland	4.4	3.4	2.3	1.6	29.7	38.2	24.4	27.4
Italy	4.7	8.1	8.7	10.1	327.4	324.6	287.8	277.9
New South Wales	3.3	2.8	1.7	2.5	116.1	101.8	93.9	92.5
New Zealand	5.1	2.0	2.7	6.3	70.0	10.8	34.2	21.0
Scotland	8.8	4.9	4.9	[1]	31.6	30.0	16.7	[1]
Spain	5.6	7.1	12.0	[3]11.1	380.2	[12]414.3	[12]319.6	[13]350.9
Sweden	9.0	7.3	4.1	[1]	22.3	17.5	13.9	[1]
Switzerland	5.3	4.4	4.0	[1]	[1]	[1]	[1]	[1]
United States (registration area)[5]	11.1	7.9	10.3	12.4	118.4	131.1	123.4	122.5

[1] Figures not available.
[2] Including typhus.
[3] The figures for the year 1908 are provisional.
[4] Including brain fever.
[5] Furnished by the Census Office.
[6] Less than one tenth.
[7] Excluding croup.
[8] The deaths from pulmonary tuberculosis being incomparable, those from tuberculosis have been substituted.
[9] Including general tuberculosis.
[10] Not tabulated separately prior to 1903.
[11] Excluding diarrhea.
[12] Excluding dysentery.
[13] Provisional, excluding dysentery.

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OSTEOPATHY

Marcus Benjamin

A method of treating disease by manipulation, which was founded in 1874 by Andrew Taylor Still, a physician residing in Kirksville, Mo.

According to him: "Osteopathy deals with the body as an intricate machine which, if kept in proper adjustment, nourished, and cared for, will run smoothly into a ripe and useful old age. As long as the human machine is in order, like the locomotive or any other mechanical contrivance, it will perform the functions for which it was intended. When every part of the machine is adjusted and in perfect harmony, health will hold domain over the human organism by laws as natural and immutable as the law of gravitation. Every living organism has within it the power to manufacture and prepare all chemicals, materials, and forces needed to build and rebuild itself, together with all the machinery and apparatus required to do this work in the most perfect manner, producing the only substance that can be utilized in the economy of the individual. No material other than food and water taken in satisfaction of the demands of appetite (not perverted taste) can be introduced from the outside without detriment."

After his own success in osteopathy, Dr. Still taught the principles of his practice to his four sons, his daughter, and three others, and in 1892 founded the American School of Osteopathy in Kirksville, Mo., from which the first class was graduated two years later. Other colleges have since been established, as follows: Los Angeles (Pacific), 1896; Boston, 1898; Philadelphia, 1898; Chicago, 1900; Kansas City, 1904; Des Moines, 1905; Los Angeles, 1905; all of which are members of the Associated Colleges of Osteopathy. These eight osteopathic schools now enroll (1910) over 1,300 students, who pay yearly some $200,000 in fees.

An American Osteopathic Association was organized in Kirksville in 1897, for the purposes of working toward and attaining "all things that will truly tend to the advancement of osteopathy." It has held fourteen annual meetings, and in 1906 founded the A. T. Still Research Institute, toward which $80,000 have been subscribed. Laboratory experiments carried on by means of this fund "have fully demonstrated in a thoroughly scientific manner the effects of spinal wrenches on nerves, vessels, and muscles, as well as on distant organs. Both the immediate and the remote effects, as shown by these experiments, confirm the osteopathic theories of the causes of disease." Since 1901 a monthly *Journal of the American Osteopathic Association* has been published. The association has a membership of over 2,000 practitioners, which, it is claimed, represents forty per cent of those in active practice. There are also numerous state and local organizations. In forty states the practice of osteopathy has been given legal recognition.

Besides various text-books, see *Osteopathic Health*, with which is consolidated *The Osteopathic Advocate* and *The Right Way*, now in its nineteenth volume.

XXIX. ENGINEERING

CHEMICAL ENGINEERING

William M. Grosvenor

Definition.—In discussing for the first time this particular field that so well illustrates the modern tendency to specialization, The Year Book may be pardoned for attempting a definition of "Chemical Engineering," that branch of applied (engineering) science which deals with physics and chemistry used on a commercial scale for the purpose of elaborating raw materials through changes in fundamental composition or structure. As in most fields, there are many shades of opinion regarding the precise scope of chemical engineering, but the definition given aims to express the consensus of opinion of those men actually engaged in this work and most competent to define its limits.

It is difficult to pronounce any given achievement to be "of the past year," "the year before," or "the year to come." Large advances in any branch of science come gradually. Advances in industry are even more gradual. Therefore any manufacturing achievement of the last year or two should be noted as "Chemical Engineering" if it either

(*a*) Engineers a process of chemical change as distinguished from a physical change of admixture, location, arrangement, property, or use; or, if it

(*b*) Places in the hands of those thus engaged a new tool (mental or material) of value to their craft.

American Institute of Chemical Engineers.—In industrial work, organization is a most important factor of success. The organization of the chemical engineers (as a body of men peculiar in their purpose and interest) may, therefore, be cited as perhaps the most notable achievement in this field. The American Institute of Chemical Engineers was founded in June, 1908, at Philadelphia, after prolonged discussion among chemists and engineers as to the advisability of another society. Opinions on the subject were widely diverse, but there was unquestionably a strong demand, however limited the number of members. The functions of such an organization could only be performed under strictly limited conditions of qualification for membership, and a great deal of preliminary discussion and study was given to these matters. The Year Book refers those particularly interested in the subject to the secretary, Dr. J. C. Olsen, Polytechnic Institute, Brooklyn, N. Y. Initiated at Philadelphia two and a half years ago, the institute has rigidly maintained its character and purposes and doubled its membership. The character of its members and the material presented at its meetings mark the organization as already a definite achievement, with great powers of future usefulness.

Iron and Steel.—In the iron and steel industry the most notable advance bearing upon chemical engineering work is the initiation by the United States Steel Corporation of the policy of conserving the low-grade deposits of ore. Formerly ore of fifty-eight per cent was demanded and lessors found it impossible to secure conservation of lower-grade deposits in the mines. Properties were gutted and the low-grade ore dropped without thought of its value. Great progress has been made in smelting, and it is rumored that a process is under development in the West by means of which thirty-five per cent ore can be economically reduced. As available tonnages are coming to be calculated and a probable exhaustion of the ore deposits predicted, and as improvements already made in smelting methods indicate how much the future is likely to bring forth in that direction, the Steel Corporation has wisely initiated a policy of conserving all ores exceeding forty-five per cent in iron, avoiding the wrecking of such deposits on the one hand, and on the other using as great a proportion of low-grade ore as possible by blending. The system of classifying ores at the mines and blending in transit has made possible such improvements in this direction as were hitherto undreamed. At Eveleth, Minn., is located an assay office for ores shipped (via D. & I. R. R. R.) at Two Harbors, and in Hibbing is an office for ores shipped (via D. M. & N. R. R.) at Duluth. To one of these offices a sample of every car loaded by the Steel Corporation is brought, its analysis is completed and instruction as to its disposition is wired the dock superintendent before the car reaches the respective dock. While the barge is coming up the lakes, the character of cargo desired is wired to the assay office controlling the docks at which she is to load. From known ores in pockets, or cars at the docks or in transit, her cargo is made up by the assay office and instructions for her loading telegraphed to Duluth or Two Harbors. If a part of the ore required to make up the desired cargo is not at the moment available in the docks or yards, instructions are telegraphed to one of the properties where the quality needed is available, to get out the required number of cars at once. In this manner it is possible to make up the 13,000-ton barge loads very close to desired analysis, and complications or shortages at the furnace are largely avoided.

Refuse Iron Ores.—A plant has been installed in Bayonne for the briquetting of the iron oxide cinder formerly a refuse from the burning of pyrites to make sulphuric acid. The extension of this process would add something to the revenue of the acid manufacturer and contribute not a little to the supply of ore.

The Dried-Air Blast Furnace.—The use of dried-air for the blast furnace is no longer an experiment. Plants are being installed in many parts of the world. Two are in operation in this country. The advantage lies not merely in removing from the furnace the thermal-load of dissociating considerable quantities of water, but also the chief causes of variability in the operation of the furnace. The importance of maintaining at the highest intensity the zone of reaction just above the tuyeres is being more keenly appreciated. The flame of reaction at this point is similar to any other flame in that moist air or irregular quantities of air seriously affect its location and intensity. By establishing the blower plant between the drying installation and the furnace, a constant temperature and humidity is maintained at the blower and a constant supply of air secured. Improvements in the drying process bid fair to reduce by sixty per cent the present cost of removing the moisture, but it may already be said that the saving of fuel in the furnace repays all cost of the drying operation, and that regularity of running and consequent increased capacity are clear gain. It is privately reported that French plants have developed methods less expensive to install and operate but, unfortunately, less effective in the equalization of supply.

Electric Smelting Methods are being steadily perfected, but have so far proven their availability only under special conditions or for the special refinement of steels. This, also, has been taken up by the United States Steel Corporation in its South Chicago plant, and at Worcester, Mass. The economic cutting and welding by the combined oxygen and acetylene flame is becoming more widely used both in the construction and repair work.

Special Steels.—The Goldschmidt-Thermit process of welding has been broadened in scope and commercially applied to the manufacture of rare metals and alloys. Great progress has been made in the manufacture and use of special steels—alloys of remarkable properties (particularly hardness, toughness, and resistance to corrosion). One company has for some years been devoting itself to the manufacture of these alloys in the form of cast and machined gears, and parts for traction and other purposes; another company to the manufacture of special coefficient wire. The revolution that self-hardening steel is making in machine-shop practice can hardly be realized by those not directly interested. Several alloys of entirely new properties have been offered.

The Copper Industry.—In the copper industry perhaps the greatest progress has been the more widespread appreciation of the need of an industrial balance wheel that shall give the industry something of the stability and power that the United States Steel Corporation has contributed in its industry. When an organization of sufficient strength can be perfected to regulate a large percentage of the output, and the broad far-sightedness that Gary, Gayley, Cole and others have given the iron and steel policy can be brought to bear upon the red metal, much of the uncertainty will be eliminated and the industry enter upon a new era of prosperity. Several attempts in this direction have recently been made, so far without success. In common with other industries using sulphide ores in large quantities, copper producers are facing the serious problem of fume disposal. Two strides toward its real solution have been made. At Copperhill, Tenn., the enormous chamber plant of the Tennessee Copper Company originally designed by Mr. Falding has finally been modified and the smelting process adjusted by the efforts of Mr. Wedge and Mr. Wierum until it is no longer a questionable investment but a profitable success. The actual production of the plant has been doubled, and a second plant of greater capacity is in progress of erection, to be completed by Jan 1, 1911. The Ducktown Sulphur & Copper Iron Company has followed this method and erected a chamber plant designed to treat all of its smelter gases. Such valuable improvement, however, is as yet practised only when phosphate rock for making fertilizer is readily obtainable or some other outlet for the enormous quantity of acid is at hand. At Salt Lake City the visible evidence of fume is suppressed and a little valuable material recovered by the ingenious process of smelting sufficient zinc ore with the charge, to supply zinc oxide to neutralize the sulphur in the fumes, followed by filtration through bags. Dust and sulphuric anhydrid are very fully removed, but sulphurous acid escapes without hindrance. Similarly all solid and liquid particles have been removed by static electrification. At best these are methods of alleviation rather than of cure, since the exits of such added plants are still undesirable. A process for wet extraction has been developed and tested on a moderate scale to the entire satisfaction of those interested, but it appears not to solve the real problem, since it merely avoids the nuisance at the expense of new equipment but does not propose to make available the enormous values at present wasted.

Another process has been suggested that proposes, regardless of location, the recovery and valuable utilization of every constituent of the fume—a real solution of the problem; but little information is available, and the process seems not to be perfected. Meanwhile, Atty. Gen. Wickersham and his assistants are examining the damage done by smelters at Butte, the New York State authorities are attempting the suppression of nuisance alleged to be committed by plants in Bayonne, adjoining states are proceeding against the smelters in southeastern Tennessee, and other interests in Utah and California are threatened. One of the chemical (or metallurgical) engineer's greatest problems is being pressed home to him more sternly than ever before.

In other directions the advances of copper and allied industries are notable. By regrinding and reconcentrating the Calumet & Hecla Company is saving an additional million pounds of copper a year. Refining furnaces have increased in size and capacity, as did the iron furnaces some years ago. Large furnaces held 60,000 pounds in 1890, 100,000 pounds in 1900, and 450,000 pounds in 1910. Great economies have been made in casting, and the process of extruding rods of peculiar cross section (some of them impossible to roll) is a great success. The ingot of brass is heated and hydraulic-pressed out through a small hole of any desired shape in a die.

The Use of the Rare Metals.—The

increased use of the rare metals is making the museum curiosity of yesterday an every-day acquaintance of to-day. Nickel steel is daily finding new uses, and nichrome, calorite and vanadium alloys divide interest with the action of titanium in effecting the properties of steel. The original tungsten filament of the incandescent lamp is now followed by the malleable tungsten filament from the laboratories of the General Electric Company. The manufacture of calcium alloys and preparations of special glass for removing from artificial light the ultra-violet rays injurious to the eye, all testify to the popularization of the rare elements.

Power Generation.—The utilization of low-grade fuels is receiving constant study, and the work of the government testing stations deserves mention, because every step in this direction opens a new horizon of fuel deposits, valuable in quantity out of all proportion to the slight improvement in method. Simple and inexpensive changes in boiler settings are thoroughly proven to accomplish a smokeless combustion of soft coal where its price renders it advantageous and to insure valuable economies of either fuel, while the broadening application of carefully studied water purification and knowledge of corrosion effects coöperate to steadily increase efficiencies of absorption. The problems of fuel, scale, and corrosion have for years been left to the consideration of the mechanical engineer, but are being more keenly appreciated as problems belonging peculiarly to the field of chemical engineering. As such they are now being successfully attacked. A better chemical engineering of the energetics of the internal combustion engine is revolutionizing its application, and better understanding of gas purification is making enormous supplies of waste furnace gases valuable.

Lubrication.—Lubrication is another purely engineering field into which the chemical engineer has recently entered, apparently to revolutionize it. The future of graphite is difficult to limit. Nature alone supplied it in impure form of generally fibrous structure, very difficult to separate from the gritty mica and talc associated with the graphite and having nearly the same specific gravity. The electric furnace has been made to yield a purer product of better structure, incidentally contributing to its own success by making possible artificial graphite electrodes of almost any size and form. Our information is that for months together the average purity of artificial lubricating graphite exceeds 99.94 per cent. But graphite has recently been "deflocculated"—i. e., reduced to such molecular fineness that it is practically dissolved in water or oil and intimately blended with grease. The fineness of division is so great that no filter will retain it, and its "solution" never settles. While in a sense the change is physical, it is proper to regard it as chemical, since the action is one of the now numerous and important practical results of study in the field of colloid chemistry and is produced by the action of tannic or other organic decoction upon finely divided graphite, with every appearance of actual solution. The aqueous "solution" has given truly wonderful results on machine tools as a cutting lubricant marketed under the name of Aquadag, the letters d-a-g being the initials of Deflocculated Acheson Graphite. Oildag, a similar preparation with oil as the liquid, has shown astonishing fitness for the internal combustion engine. The graphite does not evaporate or burn, as does the oil, but forms an unctious veneer or film that prevents the siezing or cutting of the metals. For automobile cylinders and high-speed bearings a small per cent of deflocculated graphite in the oil reduces the amount of oil required to less than a third of that needed when oil alone is used, reduces the moving friction and leaves the surfaces in better condition. As a means of purifying graphite, deflocculation leaves nothing to be desired. The use of disintegrated artificial graphite in glazing explosives by the Du Pont Company lubricates the rifle with every shot and greatly increases the efficiency of high-power, rapid-fire weapons. Made at a temperature above 7,500° F. it is little affected by any temperature developed in discharge. Some have gone so far as to say that the problem of the future lubricant for all time has been solved by these discoveries.

Chemistry in Agriculture.—Agriculture has been made debtor to the chemical engineer in several ways. Fertilization has received enormous impetus, partly the fruit of years of effort in Germany by Frank & Caro, whose work in the fixation of atmospheric nitrogen as cyanamid is brought home to us by the completion last year of one plant at Niagara Falls and the beginning of another in Tennessee. The fixation of atmospheric nitrogen as calcium nitrate just perfected in Norway to the point of duplicating the first manufacturing plants, has not yet taken root on our soil. Possibly the improved methods of prolonging the electric flame and increasing its efficiency of conversion which the Badische Company has this year demonstrated, will make the industry commercial at the cost of water power in the United States. Thus has the dream of Sir William Crooks a decade ago become commercially true. [No less important is the work that has been done in the last few years in showing not merely how certain plants accumulate nitrogen by bacterial colonies on their roots, but in further proving that under proper conditions the soil itself is also enriched without apparent deterioration of the leguminous plant, and that Azotobacter carry on by themselves a similar work. The achievement of industry is not to lack the competitive stimulus of agricultural methods.]

Fruits and vegetables are now being dried on a large commercial scale, and the United States Government recently set the seal of its approval on the products by large contracts for the navy. Formerly the process used required such temperatures and humidities that the products were given a characteristic taste and smell owing to partial conversion of some of the sensitive esters. Low temperatures and rapid methods have almost wholly overcome this difficulty. Similar results have been accomplished for eggs, and are being undertaken with milk and other products. It is rumored that an electrolytic process of preserving fruits and vegetables intact has been devised, but as yet it is not commercial. Some progress has been made toward standard drying of grain to prevent chemical and bacterial action in transit, but not a great deal.

The quick curing of hay is almost a commercial fact. $600,000,000 would not purchase the hay crop of this country, and the annual losses, owing to adverse weather while drying, are very large. Two hours from the standing grass to an excellent quality of baled hay, regardless of weather conditions, appears to be an assured fact, though not yet commercially exploited. Lumber is being grown artificially filled and tinted so that it is now possible to secure a depth and texture of color for wood finishing that defies imitation by stains applied later, and breaks or scratches present no change of color. A new process of preparing white dried apples (without sulphur bleaching) has been devised.

Plastics.—With Bakelite chemistry has also entered another field in successful competition with nature, mentioned here because the chemical engineer has thereby been given a new substance to consider and apply, and because incidentally chemical engineering problems of no small difficulty were involved in the successful production of the products for the market. The commercial handling of the various products by Dr. Baekeland and others illustrates the modern tendency to friendly coöperation or consolidation rather than destructive competition. As all the products are new in method of production and properties, an outline of two will be given, and some of their respective uses will be pointed out. Bakelite is a product resulting from the chemical union of phenols and formaldehyde. Typically, it may be said to be oxybenzylmethylenglycol-anhydride (or its homolog) polymerized (by the addition of several molecules together) to form a complex molecule. The chemical reaction occurs in several stages, and in the prior stages the product is fusible, soluble, and plastic. Subjected to heat and pressure it polymerizes, becomes more solid but still plastic. Additional heat and pressure further polymerize it, increasing hardness and elasticity. In its final stage it is hard and infusible, resists all solvents and almost all chemicals, stands temperatures as high as 300° C. (572° F.) or above, but chars at the temperature of melting glass without fusion. By concentrated sulphuric acid or nitric acid it is also charred and is attacked by bromine. But it stands very well the action of chlorine, hydrochloric acid, and cold sulphuric acid, while even boiling sulphuric acid has no effect on it, if dilute. Certain varieties of the product can be made to withstand hot caustic solutions. Mixed with mineral substances like asbestos the resistance of Bakelite to heat is considerably increased. In the unmixed condition it may appear as a perfectly transparent amber-colored substance, which is much stronger and more resistant than amber, and can be turned and polished to a high finish. One of the preliminary forms is liquid with which wood or other porous material can be impregnated and subjected to final hardening under the action of heat (120°–200° C.), (248°–392° F.) and pressure. Except for jewelry purposes Bakelite is generally mixed with other materials—e. g., asbestos, wood fiber, mica, etc. Its great impregnating power makes small quantities (10%) of this binder sufficient to produce very strong, compact, molded masses. Electrical coils can be impregnated with the preliminary liquid and submitted to the hardening action of heat and pressure so as to imbed the wires in a hard infusible mass. For such purposes it has a high specific electrical resistance, dielectric strength, mechanical strength, and resistance to temperature, all varying considerably according to the nature of the compound. With asbestos it will stand considerably higher temperatures and high-pressure steam at a temperature of 200° C. (392° F.). With wood fiber it is more adapted to machining, has great toughness and shows higher dielectric strength because the wood pulp does not contain materials like iron, which are always present to some extent in asbestos; will resist water, steam, oil, and solvents, but will not withstand such high temperatures (above 150° C. or 302° F.) for long periods. Some of its applications are electric railroad and other insulators, spools, coils, insulating tubes, switches, fuse blocks, etc., impregnation of dynamos, motors, etc., impregnation of wood for securing of high finishes, protective varnishes, acid resisting lacquer, lining for chemical pumps; and other machinery; in conjunction with graphite, for self-lubricating bearings, pump valves and valve disks; with other substances, for musical instruments; as a binder for grindstone; for the manufacture of acid-proof valves and faucets, photographic trays, pipes, and pipe stems, brush and knife handles, billiard balls, phonograph records, telephone receivers, buttons, surgical instruments, fancy goods, etc. To illustrate its behavior, the following may be cited:

A stick of pure Bakelite was boiled continuously for 260 hours in ten per cent sulphuric acid, submitted continuously for two months to ten per cent caustic soda at 70° C. (158° F.), or kept in a steam digestor for twelve hours at 226 pounds (200° C. or 392° F.) without effect. A steel pipe thinly coated conveyed for twenty-one days and nights hot, damp chlorine gas at 60° C. (140° F.) without alteration. A piece of Bakelite and wood pulp one quarter inch thick resisted on successive trials from 60,000 to 70,000 volts when placed between one-inch brass termi-

PROPERTIES OF BAKELITE INSULATING MATERIAL

	Bakelite and Wood Pulp.	Bakelite and Asbestos.
1. Specific resistance in megohms per cubic centimeter..........	35 x 106	.01 x 106
2. Dielectric strength of thickness 375″ in volts at moment of puncture	115,000	42,500
3. Dielectric constant in kilovolts per centimeter................	121	45
4. Mechanical strength in pounds per square inch.—Tension......	650	1,200
4. Mechanical strength in pounds per square inch.—Compression..	15,000	18,000
6. Maximum working temperature in degrees centigrade.........	90	450

nals and immersed in oil. Blotting paper impregnated with liquid, was similarly tested having final thickness of .049 inches, and broke down with 40,000 volts, sixty cycles, sine wave generator, voltages being in each case rapidly raised and readings taken by conversion. Properties of the two important mixtures are tabulated on the preceding page.

Under the name Protal a substance, said to be derived from vegetable albumin (various forms of which are obtainable as vegetable ivory, vegetable caseins, reserve cellulose, horny albumin, himi-cellulose, glutens, etc.), is being placed on the market. It is stated to have many and various uses and advantages with which the writer has no personal experience. The use of Bakelite in small quantities water proofs Protal and improves its dielectric qualities, and Protal-Bakelite possesses certain advantages over hard rubber, ebonite, and various fibers in some classes of electrical work.

Rubber is being replaced in mixtures to some extent by products of corn oil. Also thousands of hard-rubber pump valves are this year being displaced by the simpler, cheaper and far more durable wooden valve well known to our fathers. Now, however, its tendency to warp or split is perfectly overcome by a hoop of brass. The wooden disk grooved around the edge slips within the hoop easily when dry and expands firmly, forcing the hoop into the groove, when moistened. Also the chemical engineer is taking up Harries synthesis of rubber, as yet of scientific interest only.

Animal products have profited by similar advances. Chemical preservation of meats will be touched upon later, but chemical engineering has given us a new process of refrigeration that may mean great advances where power is less freely available.

The Twitchell process of saponification has greatly simplified and cheapened saponification of fats and has aided in the utilization of refuse wastes and to this extent increased the supply of glycerine. Simultaneously the Wood process of multiple effect distillation has lessened the cost of refining and improved the quality of the product, particularly of the lower grades of crude glycerine yielded by the cheaper refuse material. A new, more rapid, and more economical method of tanning has been put in practical operation, also a process recently devised for fortifying and waterproofing culled hides and skins is now in practical operation on a moderate scale, and materials hitherto almost valueless are being rendered valuable by the great increase of their strength and wearing qualities. Artificial leather has taken a new position in the market with the entrance of the Du Pont Company upon the field. The standardization of products and qualities, and the purchase by this company of the largest and oldest of the manufacturies of nitrocellulose leather, gives the seal of permanence to the industry. Few people realize how little real leather is used in car seats, furniture upholstering, buggy and automobile tops and seats, cheaper bags, book covers and "leather novelties."

Chemicals.—In the strictly chemical lines of manufacture there is less of progress to note. The policy of the industry is one of secretiveness, extremely detrimental to progress. The great chemical engineering achievement of the last decade of the last century—commercial synthesis of indigo and the attendant contact process for making sulphuric acid, distillation methods of making glacial acetic acid and new processes for the manufacture of chlor-acetic—left much finishing work to be done on the several contributory processes. In the last year or two the contact process has been so far perfected that, under certain favorable conditions, it is cheaper thereby to make 93½ pounds of sulphuric containing 28 per cent free anhydride, equivalent to sulphuric 106¼ per cent strong, than to make 151½ pounds of chamber acid containing 66 per cent of acid. A little cheaper under proper conditions; but improvements in the chamber process, new methods of concentration and (so far as this country is concerned) the royalties exacted by those making every effort to control the use of the contact process go far to assure long continuance of the general use of the chamber process. Particularly is this the case in view of the sensitive character of the contact operation and the careful regulation demanded for its successful use. The briquetting of cinder from pyrites burning has been mentioned. The work of Dr. Baekeland and others had just placed the Townsend cell (for making chlorine and caustic soda from salt) on an easy commercial footing when fire unfortunately crippled the plant—for a time only. The process has come to stay, is now in operation abroad and the company is not only rebuilding, but also building elsewhere in the United States. Among the problems incidental to the perfection of this process was the best utilization of the chlorine produced and a simple, rapid and economical method of detinning scrap tin was one of the notable achievements. Following hard upon this success in the production of electrolytic caustic, comes a new cell of the same general type said to possess all the advantages of the Townsend cell, though simpler in construction and not requiring the costly (possibly dangerous as a fire risk) covering with oil. The peculiarity of the new cell is that it was simultaneously developed for the production of caustic soda or caustic potash and is said to have proven equally efficient for either.

Ozone.—The use of Ozone, of which so much has been said and written during the last decade, seems to have commercially arrived. The largest use is for the purification of water and air, but it has considerable value for sterilization, bleaching, deodorizing and for preservation of foods. Development has been slower in this country than abroad, because of less crowded conditions here. Cost has been reduced to about five per cent of what it was ten years ago and what may be expected here is indicated by the fact that in continental Europe about $10,000,000 worth of business was done in Ozone generators during the year 1909. For the preservation of meats in cold storage it is said to have peculiar advantages and economy, making storage at 45° F. quite as safe and far less expensive than storage at 35° F. or lower. Plants are in operation in Chicago for bleaching and purifying oils and for bleaching and deodorizing fancy greases, in Montreal for purification of water, in hospital service in New York City and some Pennsylvania hospitals, as well as in Chicago.

Silicaware.—A new industry has arisen from the fusion of sand. Silicaware has been coming on the market in small-sized tubes and vessels for some years, but recently it has been found possible and economical to make much larger articles, pipes twelve to fourteen inches in diameter, three or four feet long; vessels and retorts of ten or twelve gallons capacity are now being made and proving of great value in many ways by their resistance to temperature changes and to corrosion, and by their ability to withstand extremely high temperatures. The "Cascade" system of concentrating sulphuric acid (running it down from dish to dish of a series set in brickwork and fired from below, or both from above and below), bids fair to draw a new lease of life from this achievement of large-sized quartz vessels.

Temperature control in many chemical (as well as metallurgical and other) processes is being reduced from rule-of-thumb to the utmost precision and accuracy by improvements in pyrometric materials. The latest achievement in this direction is a recording instrument capable of registering on a single sheet the temperatures at any number of stations up to thirty-two, requiring from one to two minutes for each station. Thus it records every one of sixteen stations every half hour, or each of thirty-two stations every hour. Apparatus in this line has been so standardized that one company has equipped eight plants in widely separated parts of the country with about 150 thermometers and twenty-eight observing instruments, any part of which equipment is interchangeable with any other part from any other works, with an error of less than two degrees and a probable variation not exceeding one degree in 500° F. (See also XXIV, *Industrial Chemistry.*)

CIVIL AND HYDRAULIC ENGINEERING

Frank C. Wight

Introduction and Definition.—Civil engineering as a trade, as a practice of the artisan, is one of the oldest of man's activities; as a profession, as the application of a highly specialized intelligence to the constructive problems of a complicated modern life, it is a development of the past century. Necessarily the profession had to take from the trade all of the latter's fundamentals and from these basic principles and methods to evolve the present-day methods. In the very nature of the work such evolution must be slow, a gradual process from year to year, scarcely perceptible in any minor period of time, but wonderful in the aggregate. Because of this rarity of epoch-making discovery in civil engineering, it is a most difficult matter to set down categorically the advances made in any one year or even in any one decade; the change in methods is too deliberate. Since, however, civil engineering, in the restricted sense, is the science of construction, including in that construction the mental labor of designing as well as the physical operation of building, the most useful means of recording its regular progress is to set forth the various noteworthy structures built during the period covered by the record, leaving the progress to be judged by the detailed description of each structure.

Earthwork and Foundations.—During the year 1910 the progress of earth removal on the Panama and New York State Barge canals has been phenomenal, and on account of the large amounts to be cared for at these two pieces of work, it is from them that any progress in methods should be expected. On the Isthmus the daily total average excavation in 1910 did not equal that of the year previous on account of the restrictions in space as the bottom of the canal is approached, but the daily average earth removal for the year was about 105,000 cu. yds. as against a maximum of 144,000 cu. yds. daily during one month in 1909, the record for the canal. One 70-ton steam shovel at Panama dug in an 8-hr. day 4,823 cu. yds. of rock and earth, a fair example of what these big machines can do under forced pressure. In comparison to this a hydraulic dredge working on the Barge Canal in one 31-day month, at 144 hrs. per week, excavated 361,000 cu. yds. of earth. At Panama all excavation in the dry has been done with the ordinary type of steam shovel and in water by dipper, ladder, and hydraulic dredges; but on the Barge Canal the variable conditions have brought out any number of different types of excavators. For dry work, these have been mainly of two types, either a kind of drag scraper, in which a large scraping bucket is pulled, full of earth, from the hole toward the dump by a cable attached to a stationary tower back of the dump, or a bridge conveyor, in which the bucket, filled by steam shovel, is carried back to the dump on an overhanging or suspended truss bridge.

The so-called "re-grade" at Seattle, Wash., continued during 1910. This is the removal of some 31,000,000 cu. yds. of earth from a number of hills in the middle of the city, to provide more reasonable grades in the business streets. Over forty-three city blocks are involved, and the levels are reduced in some places as much as 110 ft. The work is being done by the hydraulicing process, that is, by playing large streams of water under heavy pressure upon the side hills, which are of earth, and washing the material down into tunnels through which it is conveyed to the ocean.

The pneumatic caisson foundation work in progress on the new Municipal Building near the Manhattan end of the Brooklyn Bridge, New York City, surpasses in depth any of the many similar foundations in the lower end of that island where such foundations are dug deepest. The deepest of the piers was sunk to 112 ft., which means that an air pressure of 48.6 lbs. or over three atmospheres, was needed as the bottom of the shaft was reached.

Concrete. — Contrary to general opinion concrete, that is, an artificial stone made by the combination, with water, of a hydraulic cement and small particles of sand and stone, is not a very new material. There are many evidences of its having been used in the remote past; and in the immediate past it has been one of the most important of the engineer's structural materials. Its sudden rise to public notice in the last decade has been largely due to the invention of reënforced concrete, that is, concrete strengthened with steel rods, in which the steel takes care of all tensile strains and the concrete of the compressive. For many years whenever an engineer needed a strong, heavy material of great mass and competent to withstand direct compressive force, he has used concrete, particularly where cut stone was unavailable. It is only of late that he has been able to use it in a structure subjected to tensile or bending strains, which have heretofore been resisted by metal or wood. This new application of concrete is bringing it rapidly to the front of all structural material. All manner of structures are now being built of it. Bridges, buildings, dams, barges, telegraph poles, railway ties, tanks, reservoirs, all are now possible in concrete and many similar structures.

In setting down the progress made in its use, unquestionably the most important step forward is the great increase in care with which concrete is now made. Being an artificial material, made up of three variable constituents and manufactured, as a rule, under hurried conditions and by cheap labor, its strength and life cannot be predicted unless great care and the best material are used in its production. At the beginning of the boom in its use, these elements were not considered, with the result that a vast amount of poor work was foisted on the public and a number of serious failures resulted. Soon, however, the necessity for good work became recognized and the campaign against careless construction commenced, so that to-day the work in concrete is quite on a par with that in wood or steel.

Highways and Pavements. — The problem of highway construction to-day is to be found in the automobile. Equipped with broad rubber tires, the motor vehicle at first sight would seem to be less destructive of a road than the narrower and harder tired vehicles of the past, but on account of the tremendous power imparted to the driving wheels, it is an observed fact that the automobile exerts a tearing action on a road surface most destructive in its results. The primary evidence of this action is the prevalence of dust on any motor-traveled road, but the final and real effect is the rapid wear of the road, and it is against the latter as well as the former that the best efforts of road designers are being directed. The solution seems at present to be in some binder such as tar or oil which can hold together the smaller surface particles and prevent their disintegration. This oil or tar is either mixed with the road metal when it is placed or it is sprinkled upon or forced into the road surface after its completion. An intimate mixing seems to be more efficacious than a surface sprinkling, but the latter is necessary when a finished road needs treatment. The federal and various state highway bureaus are engaged in experiments to determine the binding value of different road materials and to these studies we must look for much of the progress to be expected in the future.

Bridges.—While mere size in an engineering structure is not always a valid claim for merit, it is always a distinguishing mark that carries interest. Especially is this true of the masonry arch bridge, in form one of the oldest of engineering expedients, in huge size one of the more recent developments of the bridge-builder's art. Up till 1855, when the 220-ft. Cabin John arch was built just outside of Washington, D. C., there was only one other arch in existence with a span equal to 200 ft., the Grosvenor arch at Chester, Eng. From that time until the completion of the 295-ft. span at Plauen, Germany, in 1905, there were only eleven arches of over 200-ft. span built in a period of fifty-five years. For five years this Plauen Arch held the palm until, in 1910, two spans surpassed it, the Grafton arch in Auckland, N. Z., with a central span of 320 ft. and a 328-ft. span across the Tiber at Rome, Italy. The former was opened for traffic in the spring of 1910; the latter is still in course of construction. Each is of concrete, reinforced with steel to take care of excess strains and each far surpasses the largest of all previous bridges of this type. During the year there also has been built the Rocky River arch, at Cleveland, O., with its 280-ft. main span and there is building the 281-ft. Monroe St. arch in Spokane, Wash., the two largest masonry arches in the United States. There is under design for the crossing of the gorge at Medina, N. Y., on the line of the New York State Barge Canal, an exceptionally heavy concrete arch of 285-ft. span. In addition to its large span, the arch is noteworthy because of the excessive load it must carry, 13 ft. of water, and its extreme width, 129 ft.

The Manhattan Bridge.—In steel bridges the most noteworthy structure of the year 1910 is probably the New Manhattan Bridge across the East River at New York City. This is the third of the large suspension bridges and the fourth bridge to be completed across that river. In size it is somewhat smaller than its two companion suspension bridges, the old Brooklyn Bridge and the Williamsburg Bridge, opened in 1903, but it represents the latest ideas in long span suspension bridge practice. It consists of two steel towers carrying a central span of 1,470 ft. and two side spans each 725 ft. long, with provision for eight railway tracks, one roadway and two sidewalks. The towers and the floor are of carbon steel, the trusses of nickel steel and the cables of carbon steel wire. It was opened formally Dec. 31, 1909, but it will not be until some time in 1911 that the rapid transit railway which crosses the bridge, connecting it to the two neighboring suspension bridges, can be put into operation.

Cantilever Bridges.—In the cantilever type of structure, the largest bridge of the year is the Beaver Bridge across the Ohio River at Beaver River, Pa. This is a double-track railway bridge, with a middle span of 769 ft. and two side spans of 320 ft. each, thus making it the third largest cantilever in the United States, surpassed only by the Blackwell's Island Bridge at New York City with a middle span of 1,182 ft., the Wabash R. R. Bridge at Pittsburg with 812 ft. and the Memphis Bridge across the Mississippi with 790 ft. On account of the nature of its loading, the Beaver Bridge has probably the heaviest steel work of any truss bridge in this country. It was opened for traffic May 14, 1910.

The past year saw the resumption of work on the ill-fated Quebec Bridge across the St. Lawrence River, which collapsed during construction on Aug. 29, 1907. This bridge was to have been the largest bridge in the world, a steel cantilever with a middle span of 1,800 ft. and two anchor spans each 500 ft. long. It was approaching completion when the collapse reduced one arm to a mass of ruins and caused the death of upward of eighty men. The new structure is in charge of a board of engineers, who have made a more or less final design, the substructure of which is now under construction. The contract for the superstructure has been let, but the work has not been started. The new design calls for a cantilever bridge somewhat similar to the old one, but of shorter main span and about twice as heavy. In it a main middle span of 1,758 ft. is flanked on either side by an anchor span of 586 ft., making a total length of 2,930 ft. against the previous 2,800 ft. This change necessarily requires that the piers be in a different position than before, but one of the old main piers is to be utilized, throwing the difference in length entirely to the other.

Railroads.—The crowning feature of the railway world in 1910 was the opening of the Pennsylvania R. R.'s extension into Manhattan Island, from the east on Sept. 8, from the west on Nov. 27. For many years the ambition of the Pennsylvania has been to establish a terminal in the heart of the city of New York and to avoid the transfer of its passengers from the trains at Jersey City across the Hudson River in ferryboats, but the depth and width of the river and the instability of its bottom precluded the possibility of a bridge; and until the last decade the science of a soft-ground tunneling had not reached a stage where a tunnel under the river could be thought of. In 1901, however, Pres. A. J. Cassatt of the Pennsylvania Co. initiated the scheme which reached its fruition in the past year. This scheme includes a mammoth terminal station, the largest in the world, in the space bounded by West Thirty-first and West Thirty-third streets, and Seventh and Tenth avenues, in New York City; twin tunnels from Weehawken in New Jersey, under Bergen Hill and the Hudson to the station; crosstown tunnels (two double-track tunnels from the terminal to the East River); four single-track tunnels under the East River to Long Island City; an enormous freight distribution yard in Long Island City known as the Sunnyside Yard; a double-track railway across the Hackensack meadows from the mouth of the Hudson River tunnels to the old main line at Harrison, N. J.; and, finally, a freight transfer road by which all freight will be taken from New Jersey at Greenville in New York Bay, ferried in floats across the bay to Long Island and thence, in future, by a bridge to be built across Hell Gate, up through the Bronx. The whole terminal system is under electric operation. The total cost of the improvements is probably over $100,000,000 for a total length of track under fourteen miles, a fair measure of the engineering difficulties of the work.

Coördinate with the work of the Pennsylvania is that of the New York Central Lines, now engaged in a complete rearrangement of the terminal in New York. This involves the electrification of all lines for a distance of from fifteen to twenty-five miles from the station—an accomplished work—and the replacing of the old Grand Central Station by a new one, now in process. The difficulties of this work are chiefly due to the fact that an immense local and through traffic has to be maintained at the station during the complete rearrangement of the topography and geography there existing. It will be some years before the improvements are complete.

In new railways on this continent, there should be mentioned the Western Pacific, opened during 1910, a line running from Salt Lake City, Utah, to San Francisco, Cal., a distance of 850 miles, through Oakland, Sacramento, and Oroville, Cal., and the Southern Pacific of Mexico, extending from the Mexico - United States boundary line at Benson, Ariz., to Guadalajara, Mex., a distance of 1,100 miles along the Pacific Coast. All but 150 miles of this latter road were put in operation in 1910.

Mention should also be made of the proposed Hudson's Bay Railway, a report upon which was made to the Canadian Parliament last year. It is proposed to build this road from Fort Churchill or Fort Nelson on Hudson's Bay southward to The Pas on the Saskatchewan River, a terminal on two Canadian railways recently completed. This road of about 500 miles could be built for about $30,000,000 and would furnish for the three or four months of open harbor, a very short route from the grain fields of the great Northwest to the markets of Europe. The project is still in the argumentative stage.

The Trans-Andine Railway. — On April 5th the Andine tunnel of this railroad was officially opened to travel, thus completing the last link connecting the two oceans. The tunnel is about two miles in length, is at an altitude above the sea of 10,600 feet, and is 2,000 feet below the summit of the pass. It is expected that trains will cross from ocean to ocean in about thirty-four hours. Two changes of cars will be required, inasmuch as the sections on the plains of Argentina and in the valleys of Chile are built with a broad gauge, while the mountain section is narrow gauged. There are five distinct organizations which own and operate the railway from Buenos Ayres to Valparaiso.

The history of construction of this railway from Buenos Ayres to Santiago de Chile is interesting. It is now more than a third of a century since the first concession for its construction in Argentina was given in

1874, and the actual work of the construction was not begun until fourteen years later, 1886. Even then work was only carried on for five years, when the company became financially embarrassed and was forced to stop operations, which were not resumed until 1899. Since that date the work has been energetically prosecuted.

On the Chilean side the work of construction was slow and often interrupted, and the railroad on the Chilean side did not reach the mouth of the tunnel until some time after the Argentinian portion was completed.

The completion of the transcontinental railroad across South America bears much the same relation to the future commerce and development of that half of the western hemisphere as did the opening of the first railroad from the Atlantic to the Pacific, across the United States, in 1869. South America has heretofore been as widely divided in its internal intercourse as though separated by an ocean. Particularly the two most progressive republics, Argentina and Chile, each containing one of the great cities of South America, are now brought more closely together than New York and San Francisco; and the development of commercial intercourse between them is certain to follow rapidly. It is significant that this development should have occurred in the year which marks the celebration of the centennial of the independence of most of the South American republics. To-day Argentina and the mouth of the river Platte are as closely in touch with the great world as Japan, the United States, and most of the nations of continental Europe. Submarine cables keep the nation in touch with all corners of the commercial world. Swift steamers of modern construction ply between the port of Buenos Ayres and the chief marts of Europe and America. Valparaiso, in Chile, on the other coast, has the largest commerce of any American Pacific port except San Francisco.

Subways.—New York, Philadelphia, and Boston still remain the only American cities with rapid transit subway systems, though there has been considerable agitation for similar systems in St. Louis, Cleveland, Toronto, and Montreal. In Philadelphia, an addition to the present Market Street system by a cross line on Broad Street has been urged, and in Boston the obvious necessity for a direct route between the North and South stations has revived the demand for a connecting subway. In spite of these demands, New York remains the only city in which any real advance in a subway system has been made in 1910. In Brooklyn, work has been started on the so-called Fourth Avenue subway, extending from the end of the present subway in Brooklyn south to the southern ends of the city. In Manhattan, work has been practically completed on the loop line which connects the three suspension bridges at the lower end of the island, but the service has not been initiated. In the latter part of 1910 bids were called for on the so-called Lexington Avenue subway, running northerly through the island from the Battery to the Bronx, via Church Street, Broadway, and Lexington Avenue.

Tunnels.—In railway tunnels, two completed during 1910 stand out distinctly from the rest, the Hudson and East River tubes of the Pennsylvania Railroad and the Michigan Central Railroad tunnel under the Detroit River at Detroit, Mich. The former is the best example of the shield-driven tunnel in America; the latter is the only example in this country of the sub-aqueous tunnel built by sinking from the water surface caissons subsequently joined together in place below the river bottom, a process used in only one other place, in the Ile de la Cité crossing of the Paris Metropolitan under the Seine.

The Pennsylvania tunnels were built by the familiar shield process, that is, by constructing a horizontal cast-iron cylinder, slightly larger in diameter than the desired tunnel, by adding to its extreme outer end segmental cast-iron sections bolted on as the bore progresses. In order to keep the soft ground from pouring into the tube, a closed end is provided, known as the shield, and this shield is pushed forward into the soft earth by jacking back against that part of the tunnel already in place. The whole end of the tube is under compressed air, to force back the water and the mud. After the tubes, which were driven from either side of the river, met at the middle, a concrete lining was placed inside. This work was completed in 1909, but not put into operation until 1910.

The Detroit tunnels represent a new departure this side of the ocean. They were built by first dredging in the bottom of the river a channel into which the tunnels were to go, so that the top of the tunnel would be just below the river bottom. Into this channel were sunk one by one the successive caissons which, joined together, formed the tube. These caissons were of steel plates and framework, and were provided with hollow sides into which concrete was placed to form the walls and top of the tunnel. Having been floated to place above their final locations, the caissons were sunk to river bottom by pumping, joined successively together, and the concrete deposited into place through tubes from a floating barge above. The outside concrete once laid, the interior is pumped dry and a concrete lining placed. The process proved successful in every way. The first regular trains ran through the tunnel in Oct., 1910.

Dams.—By far the largest masonry dams recently built in this country are those constructed by the Reclamation Service in its irrigation work in the far West. Of those recently finished, three stand out as most prominent; the Roosevelt in Arizona, and the Shoshone and the Pathfinder in Wyoming. Full details of all the reclamation projects under construction by the United States Government are given in Department XI, under the title, *Reclamation* and *Irrigation*, to which the reader is referred for additional particulars. Below is given a comparative table showing the dimensions of the three great dams above referred to and those of the famous Assuan dam across the Nile, now being enlarged to the size noted below.

	Assuan.	Roosevelt.	Shoshone.	Pathfinder.
Length, ft....	6,562	700	175	226
Max hgt., ft.	141	276	326	215
Max water depth, ft....	107	242	243	195
Crest width, ft.....	36	16	10	10
Down-str. batter	3:2	3:2	4:1	4:1
Up-str. batter	18:1	20:1	20:3	20:3
Volume, cu. yds	790,000	340,000	69,000	53,000
Storage, acre-ft....	1,860,000	1,284,000	456,000	1,025,000
Material	Granite	Sandstone	Concrete	Granite.

The Reclamation Service has another large dam just starting across the Rio Grande near Engle, N. M. This is to be of rubble concrete in gravity section, with a maximum height of 265 ft., a gross length of 1.400 ft. and a cubical contents of 410,000 cu. yds. It will store 2,538,000 acre-ft. of water, making it the largest water storage in the world.

On April 7, 1900, a 300-ft. length of a 60-ft. masonry dam at Austin, Tex., slid out under a 11-ft. flood flow over its crest, probably the greatest dam failure in the history of this country. No attempt had been made to replace the structure until 1910, when the city ordered the construction of a 65-ft. hollow concrete dam to be built into the gap left by the failure, and the remainder to be raised the 5 ft. required to make a constant crest elevation. This work should be completed in 1911.

In 1883–84, a young engineer some five years out of Yale, designed and built for irrigation storage in Bear Valley, near San Bernardino, Cal., an arched masonry dam 64 ft. high, with a top length of 300 ft. and a radius of 355 ft. It was only 3 ft. thick at the top and 20 ft. at its maximum foundation depth, being arched up-stream to give the necessary strength. At that time this was one of the boldest designs ever attempted in dam construction, and it attracted attention and discussion the world over. In 1910, the storage proving insufficient, another dam was designed, to be built some 150 ft. below the present structure, of a form almost as novel as was the original when built. The new dam is of the multiple arch type; that is, it has a series of heavy buttresses across the gorge with small arches, facing upstream, spanning between them. It will be 327 ft. long, 85 ft. high and will consist of 10 arch spans each 32 ft. long. It is to be of reinforced concrete.

Water Supply for Cities.—Two cities in the United States are now engaged in the construction of additional water supplies of extraordinary importance—New York and Los Angeles. In New York the present supply is drawn from the Croton River region on the east side of the Hudson River; the new supply, calculated to bring in 500,000,000 gals. daily, comes from the Catskill mountain region on the west side of the river. The principle features of the system are: The Ashokan Reservoir, a very large impounding reservoir about 12 miles long, of about 120,000,000,000 gals. capacity, in the valley of Esopus Creek about 14 miles west of the Hudson, at Kingston; reservoirs on Rondout Creek, near Lackawack, on Schoharie Creek, near Prattsville, and on Catskill Creek, near Durham; a concrete aqueduct, known as the Catskill Aqueduct, approximately 82 miles long; a filtration plant, near Scarsdale; a large storage reservoir, to be known as the Kensico Reservoir, near White Plains; a terminal distributing reservoir, to be known as Hill View Reservoir, in Yonkers, and a pressure conduit under the various boroughs to distribute the water to the service mains in the city.

The Ashokan Reservoir is to be one of the largest water-supply reservoirs in the world. It covers an area about 12 miles long and 2 miles wide, to be divided into two main basins. The water is to be impounded by a large masonry and earth dam known as the Olive Branch Dam, in masonry section 191 ft. at the base and 210 ft. high, and by a series of earth dikes with concrete core walls, closing the depressions in the edge of the reservoir. About 1,000,000 cu. yds. of masonry and 6,000,000 cu. yds. of earth will be required at the Ashokan site.

The city of Los Angeles (pop. 1910, 319,198), has under construction a water-supply system which is to take its water from the high Sierras over 225 miles away and deliver it to the city, at a rate of 250,000,000 gals. daily. The aqueduct which is to carry the supply consists of 186.7 miles of open conduit, 28.3 miles of tunnel in rock and earth, 9 miles of steel siphons across wide valleys, and 1.8 miles of open steel flumes across narrow gorges. In addition to supplying the city with its necessary water there is to be developed a 24-hour power of 49,000 H.P. or a maximum of 93,000 H.P. for 9 hrs. per day, 6 days per week. Until the needs of the city require all of the supply, a great part of it will be sold en route for irrigation purposes. As an engineering work this is one of the marvels of the day and no little of the interest in it is due to the fact that the entire work is being prosecuted economically by day labor under the direction of the city's engineers. The estimated cost is nearly $25,000,000.

Filtration.—In the past year there have been no noted improvements in the methods by which public water supplies are filtered, but there has been a continuance of the steady forward movement toward the universal purification of all city drinking water. Unless the source is absolutely free from pollution, some method of purification is imperative, if the health of the city is to be considered.

Canals and Rivers.—The greatest engineering work in the world to-day and probably in all history, is the ship canal now being dug across the Isthmus by the United States Government. It took many decades of technical study and political discussion to effect its authorization by the Federal Congress and as many years of initial hesitancy and discord in the actual construction to bring it down to the state in which it is to-day; but there has at last been evolved a strong, hard-working organization, under the direction of Lieut. Col. G.

W. Goethals, and his assistants in the United States Army and Navy, which has disarmed all criticism by its admirable efficiency. For further particulars regarding the Panama Canal, see XI, *The Panama Canal.*

New York Barge Canal.—Second to the Panama Canal in cost and ahead of it in many items of size is the new Barge Canal being built by the State of New York from Lake Erie at Buffalo to the Hudson River at Waterford, connecting at the latter place with a branch northward to Lake Champlain and with Lake Ontario through a branch from Syracuse to Oswego. Authorized in 1903 by a referendum vote the work has been steadily prosecuted since that time and is now about half completed. The legislative act authorizing the canal stated that it "should be not less than 12 ft. deep throughout, with a bottom width of not less than 75 ft. . . ., with a cross sectional area not less than 1,125 sq. ft." This, with locks 328 ft. long, 28 ft. wide and a depth over sill of 11 ft., will accommodate easily 1,500-ton barges, whereas the capacity of the old Erie Canal which this canal supplants is about 250 tons.

The route from Buffalo to Rome is the old Erie Canal enlarged; from Rome to the Hudson it is a canalization of the Mohawk River. The Champlain branch is mainly a canalization of the Hudson; the Ontario branch is partly canalization and partly an enlargement of the old Oswego Canal. There are to be 53 locks, ranging in lift from 8 ft. to the highest lock in the world at Little Falls with a lift of 40½ ft. Water will be supplied from Lake Erie, from the various rivers and from artificial reservoirs. The State is authorized to spend $101,000,000 on the project and it is probable that that amount will be needed. Nearly all of the main section is now under contract, though up to Jan. 1, 1911, no contracts had been let on the Seneca and Cayuga branches. On Nov. 1, 1910, a sum of $24,016,557 had been paid to the contractors.

By a referendum vote cast in Nov., 1909, $7,000,000 was authorized to be expended for an extension of the Barge Canal over the line of the old Cayuga and Seneca Canal, connecting the main line of the canal near Clyde to the lakes of those names.

Pres. Taft's Policy.—In his message to Congress signing the $52,000,000 River and Harbor Bill, Pres. Taft, in June, 1910, went on record as being decidedly opposed to the so-called "pork barrel" method of doling out appropriations for this work, and stated definitely that he would veto any similar bill that shall come before him. Heretofore, it has regularly been the custom for Congress to pass a bill appropriating various sums, totaling many millions in each bill, to be expended on various separate and isolated rivers and harbors, the individual amounts rarely depending upon the necessity for the improvement, but generally upon the importance of the particular Congressman, the continuance of whose political life forced him to be behind it. In this way vast sums of money annually have been wasted upon streams where no improvement was possible or where no connection with a general system could be expected. In future, it is to be hoped that there will be an ordered scheme of national improvement and that the appropriation for the local improvement will be gauged by its importance in that general scheme.

This message of the President is in keeping with the newest ideas regarding waterways improvement. In the reaction against the real or fancied wrongs by the railroads toward the shippers, there has grown up of late a strong movement toward a development of waterways as transportation mediums to compete with the privately owned railroads. As in all such suddenly developed movements, the advocates have, as a rule, gone too far and have claimed all manner of good things as the natural result of the fruition of their efforts, without presenting a rational, well-thought out scheme of development. In this country, as in Europe, it has been proved that the small waterway, carrying only small freight, cannot compete with the railway except under the most favorable conditions, so that it is the consensus of expert opinion that a thorough study of any inland waterway should be made before great sums are appropriated for it. To deny outright the utility of a certain route would be as fruitless as to commend it, but the necessity for more detailed study before giving enthusiastic approval is most apparent. The most important example of the present waterways propaganda is the appropriation by the last Congress of a preliminary amount to be devoted to the "lakes-to-gulf" canalization of the Mississippi, a project to provide deep water all the way down the river. This money was appropriated directly in opposition to the reports of various government commissions appointed to examine the project.

Irrigation.—In 1910, the total number of United States Reclamation Service projects passed 30, and the total amount involved in their construction, $60,000,000. In addition to this amount, which, by virtue of the original act, was obtained by sale of public lands, the federal Congress of 1910 authorized the issuance of $20,000,000 of bonds. Under both the old and the new laws, all this money will eventually be paid back to the government by the sale of water to the settlers on the land irrigated. The continuation of the work is to be supervised by army engineers.

ELECTRICAL ENGINEERING

T. COMMERFORD MARTIN

Electric Lighting and Heating.—The number of central station plants in the United States, April, 1910, was 5,550, and a total of 6,055 was reported inclusively for North America and Mexico, being a gain for one year of 431. Of these 4,414 supply alternating current, and 1,650 direct current; 154 do a purely transmission business, and 300 combine electric railway work with lighting. Many of these companies, especially smaller ones, deal in electrical supplies, 3,454 carrying such a stock, although 6,191 electrical contractors and jobbers were also reported. The central station industry has a capitalization approaching $1,500,000,000, and an income for the year of over $250,000,000.

The largest system in the world is that of the New York Edison Company serving customers whose installations aggregated on Jan. 1, 1910, 3,590,887 incandescent lamps, 38,232 arc lamps, motors of 219,832 horse-power, electric heating apparatus consuming 1,218 kilowatts of energy, and a variety of other apparatus, including several hundred automobiles. Its generating plant is driven by steam turbines and engines aggregating 197,150 horse-power. Typical on the other hand of large networks for similar service is that of the Pacific Gas & Electric Company, with 154,000 horse-power developed in its electric properties; of which 94,000 horse-power is generated in eleven stations by water wheels, 60,000 by steam and gas in six stations. The company's operations extend into twenty-four counties of central California, and it has 1,408 miles of high tension transmission lines; 950 miles of distributing transmission lines, and 167 miles of underground cable in San Francisco.

The largest electric generators ever built were ordered early in the year by the Commonwealth Edison Company, of Chicago, which broke ground for two new stations, each to have a rating of 120,000 kilowatts. The first of these plants, now going into operation, has two 20,000 kilowatt steam turbo-generators. These machines are far larger than any previous ones and are of the vertical type, each being placed over its condenser, and each being three phase, alternating; twenty-five cycle current being generated at a pressure of 2,500 volts. The company estimates that its total output of current foı 1910 will be between 500,000,000 and 600,000,000 kilowatt hours, a large part of which has been supplied to street railway systems in Chicago.

Household Electric Lighting.—It is estimated that 700,000 families in towns and cities are now supplied with electricity from central station circuits. In cities the largest proportion of wired to unwired houses is in the newer West. For Seattle the percentage is ninety-five, and about the same for Spokane, where only five per cent of the buildings are piped for illuminating gas. Los Angeles and Denver have percentages of ninety and seventy respectively, Waterloo, Ia., has a third of its buildings wired, and Detroit, Mich., about one fifth. In the larger cities of the East, the proportion is about ten per cent.

Lamps.—The year has been marked by a tendency to break away entirely from the use of the familiar open or inclosed arc lamps using carbon sticks to consume in the arc, and to substitute either metallic electrode arc flames or flaming arcs, or else to use instead metallic filament incandescent lamps for street lighting. Several cities have installed the magnetite or the titanium carbide arc lamps for their streets. Examples of flaming arc work were afforded during the year in Madison Square, N. Y., and other metropolitan squares or plazas, where the city caused the erection of fifty-foot standards each carrying two such lamps consuming twelve ampères of current at forty volts, with a mean hemispherical candle-power of 2,800.

On the other hand, the abolition of arcs, and the use of tungsten lamps on low ornamental posts have been notably rapid. A typical case in 1910 was the installation of eighty-five posts on Genesee Street, Buffalo, in Sept. The posts, set on concrete foundations, are 120 feet apart, and each post carries five sixty-watt tungsten lamps, four pendant, and one upright. The running expense of $37.50 per post is borne by the city, as the posts take the place of the series arc lamps used formerly. The posts were installed by a business men's association at a cost of $50 per post.

The present cost of incandescent lamps is established by the following prices authorized this year by the United States Treasury Department, based on 110 volts, 16 c.p. units: carbon filament, 12.92 cents; graphitized carbon filament, 14.86 cents; tantalum, 29.70 cents; tungsten, 40.68 cents. Dr. E. B. Rosa, of the Bureau of Standards, who conducted experiments for the Treasury, reported the average life as follows: carbon, 400 hours; graphitized, 600; tungsten and tantalum, each 800. He found that the average carbon lamp consumed 3.3 watts and the tungsten 1.3 per candle. These figures have a direct bearing on the "electricity allowance" which has been formulated in a general order issued by the War Department. The allowances per month, are: a captain, 48 kilowatt hours; a first lieutenant, 36; second lieutenant, 24; noncommissioned officer, 12.

An illustration of the vogue of the newer metallic filament lamps is afforded by the fact that in Paris, France, in July, more than 500,000 were reported in use in public buildings, stores, and private houses, the estimated nightly saving in cost of current as compared with the old carbon filament lamps being $8,000. They are sold on a 1,000-hour guarantee. Another feature of Paris lighting was the introduction for street lighting of quartz tube mercury vapor arcs of 1,000 and 2,000 c. p., in fairly dense diffusing outer globes, and with a life of 2,000 hours. These lamps are the same as previously adopted in Germany, but are still strangers to the American public.

Electric Heating and Cooking.—A great deal of activity was shown during the year in electric heating and cooking. In March the Chicago Commonwealth Edison Company was supplying about 15,000 kilowatts for heating. A large item was 20,000 flatirons. There were also 800 luminous radiators installed and 200 air heaters; 3,000 heating pads; 1,000 disc stoves; 1,000 soldering irons; 800 tailor and laundry irons; 500 glue pots, and 280 cigar lighters. A typical example of individual work is the new Stanley Hotel, Estes Park, Colo., in which no coal whatever is used. All room heating, water heating, and cooking is done with current from the small water power. About 100 kilowatts capacity is used in the kitchen. The cost is about two cents per kilowatt hour, including interest and depreciation.

Among the new devices of the year was an electrically heated garment. It comprises a lounging or bathrobe of woolen material in the interlining of which is inserted about 7,000 feet of fine insulated copper wire. The sleeves are also thus interwoven. The robe is connected to any outlet by an attachment plug, and consumes 550 watts at 110 volts, giving a uniform heat all over the body at a temperature up to 135° F. The garment is used in sickness, or for invalids.

The introduction of electric soldering tools has been noticeable, particularly on can work. In a paint factory in Chicago, two such machine soldering tools and one hand tool enable three men to cap and seal 6,000 cans in a ten-hour day. One man using three electrically heated heads is able to seal from 2,000 to 2,500 cans in ten hours. The gas-heated machines formerly employed took two men and six appliances to perform the same work.

Electrical Power Transmission.—A check to the development of power transmission enterprises was administered in the year by the attitude of the Government and the public agitation, in regard to "conservation"; capital became reluctant to take the added risks in connection with the utilization of such natural resources, subject to proposed restrictions and taxes. Hence very few new transmissions were undertaken; and this real conservation of water powers underwent a paralysis that threatens to continue. In his special message to Congress, in Jan., Pres. Taft stated that since March 4, 1909, temporary withdrawals of power sites had been made on 102 streams, amounting to 229 per cent more streams than were covered by withdrawals made prior to that date. The approximate water-power development in the United States to date is 3,500,000 horse-power, of which 1,600,000 is electric, and 1,900,000 is in innumerable industrial plants. The water power available at a cost comparable with steam is 37,000,000 horse-power.

Canadian Plant at Niagara.—The most interesting event in this field is the inauguration in Oct. of the vast governmental scheme in the Province of Ontario, Can. The plans involve the generation of 60,000 horse-power electrically at Niagara and a transmission potential on the line of 100,000 volts. The present plans of the Hydro-Electric Commission include the supply of about 27,000 horse-power to thirteen municipalities, at various prices according to distance, etc. Toronto, for example, is to get 10,000 horse-power at $18.10 per horse-power for daily twenty-four-hour service. It has even been proposed to utilize some of this current in Detroit, 220 miles from Niagara. In all cases, the Canadian Government meets the expense of constructing the transmission line to the city limits, while the municipality pays for the local transforming and distributing system.

Some of the recent transmission systems are closely related to irrigation and pumping in Western states, the water being compelled to do a double duty. A typical case is the Davis and Weber counties canal in Utah, seventeen miles long, carrying a maximum of 750 cubic feet of water per second, and serving more than 500 fruit orchards and farms. At a certain point on the canal, four miles from the Weber Cañon, exists a sheer drop of 220 feet to the Uintah Valley below, and this head is being utilized by a hydro-electric plant, the discharge water being returned to the Weber River.

Another aspect of this work is the pumping of underflow water for irrigation, as in northern Colorado, where the water lies twenty to twenty-five feet below the surface in dependable quantities and is now being elevated to the surface for irrigation by electric pumps at a large number of points. The water taken from each well is sufficient to irrigate from 20 to 120 acres. The cost of pumping is $2.52 per acre-foot.

Modern transmission methods are strikingly illustrated in the plans for the supply of Los Angeles with water from the Owens River by means of a 250-mile aqueduct. The cross section of the aqueduct represents the conveyance of 35,000,000 cubic feet daily to two storage reservoirs at its lower end. At three points along the route, it is now proposed to erect hydro-electric generating plants to utilize the falls, the highest of which is 800 feet; 120,000 horse-power of electrical energy is thus made available, two thirds of which can be developed within fifty miles of Los Angeles. Arrangements have been made to develop 40,000 horse-power at the opening of the aqueduct in May, 1912.

The increasing application of transmitted power by farmers is an interesting development. The La Porte, Ind., Electric Company has a 6,600 volt, single phase, 125 cycle line from La Porte to the small neighboring town of Westville, and supplied to the farmers as well. On the Elkhart River, Kosciusko County, Ind., is a low-head water-power plant which, besides furnishing several towns with electricity, serves farmers from its transmission lines. The current is used for motors which operate feed choppers, grinders, shredders, bottle washers, churns, cream separators, as well as for lighting, while one progressive stock raiser even heats electrically the water raised to the tanks for the cattle. The motor-driven grinder and crusher on one farm performs for one cent per bushel the service for which five cents would be charged at the mill; besides which, hauling both ways is avoided. In that section of the country a man can be hired to husk corn for three cents a bushel or $1 a day and board. The motor-driven husker does the work of three men, shredding 200 bushels in ten hours at an expenditure of 14 kilowatt hours, besides delivering the corn to the bin and the shredded fodder to the hay mow.

In 1910, in North Carolina, no fewer than twenty-six per cent of the cotton mills are now using electricity exclusively as motive power. The system of the Southern Power Company ramifies over North and South Carolina with a total of 882 miles of high voltage transmission line, and 149,500 kilowatt capacity of high voltage receiving transformers in the substations which deliver current to some 200 mills. The transmitting pressures of current range from 11,000 up to 100,000 volts.

In July the Grand Rapids-Muskegon, Mich. Power Company announced that for more than fourteen months it had operated without any interruption its 30 cycle transmission lines at 110,000 volts. There is now building, to go into operation in 1911, a 9,000 kilowatt plant at Cook Falls on the Au Sable River, Mich., which will transmit its energy at 135,000 volts 125 miles to Flint and later 65 miles further to Battle Creek.

One of the most interesting developments of the year is the plan to supply the whole of Palestine with electrical energy from the River Jordan, the plant to be installed between the waters of Merom and the Lake of Galilee, where the sacred stream descends 700 feet. The generating station is to be installed on the west bank of the river and transmission circuits will connect it with all the chief cities of the Holy Land.

Electric Motors.—The application of electric motors in industries already served has gained rapidly and many new uses have been noted, particularly in connection with domestic work. The operation of sewing machines in factories and shops has long been familiar; it is now the aim of central-station managers to drive the household sewing machine also, with such results that in Chicago about 1,000 houses are reported as equipped in this manner. The introduction of the vacuum cleaner driven by motor is such that it came under discussion at the convention of the National Broom Manufacturers' Association in April, as an appliance likely to be adopted in every house equipped with electricity. As a consequence the production of brooms is falling off. A novel use of the vacuum cleaner has been the ridding of pet dogs of fleas, the vacuum removing the full-grown insects and their eggs as well. The vacuum principle is also being applied to the milking of cows.

Another novel application is employed in the Federal Building, Chicago, for washing the 4,000 reflectors in use. A pair of washing tanks are mounted on a rubber-tired truck which can be wheeled anywhere about the building. The truck is equipped with a motor that can be plugged into any outlet, and which drives the apparatus for washing, rinsing, and polishing. Sixty reflectors are treated in a tank at one time.

With similar ingenuity a motor-driven eraser has been successfully introduced for draughtsmen. The eraser is attached by flexible shaft to a small electric motor running at 1,700 r.p.m., the shaft being about three feet long to permit a large tracing to be covered. A cleaning rubber is arranged to touch the rotating eraser very gently so as to remove the ink that would otherwise collect; and adjustment is made by the movement of a sleeve on the handle of the erasing head. The device connects with any lamp socket.

In heavy work, the growing application of motors is to be noted, especially in steel works and rolling mills. Other such use is exemplified by the introduction of motors in a brickyard at Dalton, Ill., where six large induction motors have been installed. Two of these of 50 H.P. each drive drying fans. Another of 50 H.P. operates two centrifugal pumps in the pump house. One 25 H.P. motor pumps water out of the clay pit. Two 5 H.P. motors operate mechanical stokers in connection with the kilns. In other works, motors have already been employed to drive the actual brick-making machinery.

The most ambitious utilization of motors is that proposed for the propulsion of large ships. The Durtnell plan advocated before the British Institution of Naval Architects is based on a system in which the steam turbine, instead of being connected directly to the propeller drives an alternating current generator whose current is supplied to a variable speed motor connected to the screw shaft.

Sept. 28, a monument was erected near Brandon, Vt., to the memory of Thomas Davenport, a native blacksmith, who in 1834 built the first electric motor and in 1837 took out the first American patent on motors. At the same time he operated a small model electric railway by motor, using the track as return. In 1840 he operated a printing press by electric motor in New York, and published two electric journals, both printed by electric power. Illustrating the advance made, the *Boston Post* has installed a Hoe press, driven by two 75 H.P. motors, which prints, folds, pastes, and counts 200,000 eight-page papers an hour.

Electric Signs.—The largest electrical sign in the world was put in operation on upper Broadway, N. Y., June 18. It is an "animated sign" to exemplify constant motion and contains about 20,000 incandescent lamps ranging from 2 to 32 c.p., as well as a number of 100 watt tungsten lamps for the sky effects. It requires 600 H.P. of electrical energy to operate lamps, motors, and "flashers." It is built to show a Roman chariot race in a stadium, and the main chariot driver and horses are 20 feet high and 40 feet long. The structure of steel rises 72 feet above the roof of the hotel on which it stands. At the top is a huge steel curtain, covering 1,800 square feet, and divided into advertising spaces in which the announcements are shown in lamps. The 2,750 switches used are designed to give 2,500 impulses of light every minute.

Telegraphy.—It had been assumed that on account of the acquisition in 1909 of a large interest in the Western Union Telegraph Company by the Bell Telephone system, an approach was being made to unification under one control of all the telegraph and telephone interests of the country. This has not proved to be the case. Although only a minority stockholder, the American Telephone & Telegraph Company is in full control of the Western Union plant, and is said to be operating it in opposition to other telegraph systems. During the year, telegraph and telephone companies in New York were placed under the supervision of the Public Service Commission; and the Postal Telegraph Company has appealed to it for protection against measures of the Western Union which, it is alleged, are of a discriminating character.

Early in the year both the large telegraph systems put in operation a new service of night messages or "letter telegrams" of which extensive use is now being made. By this system, messages for night transmission are accepted at the same rate as the day rate for ten words, but the sender has the privilege of offering up to fifty words. The system is similar to that adopted several years ago in France. The practice has also been begun of accepting and delivering telegraph messages by telephone.

As to the development of machine or automatic telegraphy in America, Major O'Meara, of the British Government Telegraphs, stated in July, after a visit of inspection, that he found the Barclay printing telegraph operated over 65 circuits from 21 cities. During one day in New York this year, 1019 messages were sent from New York to Chicago in 8 hours and 37 minutes over one of the duplex circuits, and 814 messages were received.

In a paper before the American Institute of Electrical Engineers in June by Messrs. Maver and McNicol it was stated that as a source of current, gravity batteries have almost entirely been displaced in telegraphy by direct current generators, sometimes operating with storage batteries. Electrolytic rectifiers are used to some extent for charging the batteries. In many cases Morse duplex circuits are being used simultaneously for telephone circuits, the wires of two such duplex circuits being employed as one metallic circuit for the telephone. Between New York and Boston alone at least fifty leased telegraph circuits are in daily operation as long distance telephone lines. At the present time, the tendency of American practice is to the employment of lower potentials at the terminals of the circuit and to lower resistances in the relays for multiplex working. This has been rendered possible by the use of large copper conductors in place of the old galvanized iron wire. Very satisfactory results have lately been secured on quadruplex circuits using electromotive forces as low as 200 volts on well-insulated lines of such comparatively low resistance as 2 ohms per mile, with polar relays wound to 1,000 ohms, and neutral relays to 50 ohms.

The Mexican Governmental telegraph system has adopted methods similar to those of Europe and the United States for affording wider and cheaper service and has gone even farther. It has placed on sale telegram cards costing five cents upon which a message of ten words may be written for transmittal anywhere within Mexico City. These cards are deposited in boxes, and collected at half-hour intervals.

Among the extensions of the submarine cable system is to be noted that of the German-South African Cable Company to Liberia. The cable from Teneriffe, C. I., extends to Monrovia, Lib., and is worked in connection with the cable of the German company laid in 1909 from Emden, Ger., to Teneriffe via the Azores. The cable will be extended to South America.

Wireless Telegraphy. — Wireless telegraphy has advanced rapidly in certainty, range of operation, and accuracy. A new long-distance record was made in Sept. when Marconi, in the Argentine Republic at the time, successfully received signals direct from Glace Bay, N. S. and from Clifden, Ireland, at the high-power station in South America. The distance is about 5,600 miles. During the year, the Marconi system between the United States and England put in operation a service from New York to any part of the United Kingdom at seventeen cents per word, as compared with the cable rate of twenty-five cents.

The United States Navy made elaborate experiments with the Fessenden system on two scout cruisers, leading to the conclusion that in daytime ships might be reached from the Navy Department, Washington, 1,500 miles away, and 3,000 miles at night. The Navy decided therefore to construct four wireless towers of steel, between four and five hundred feet high on the loftiest point available in the District of Columbia. A system has been completed with headquarters at Washington Harbor, Isle Royale, covering the whole of Lake Superior, so that a steamer will never be more than 100 miles from a wireless station. Towers are now in service at Duluth, Calumet, Port Arthur, Grand Marais, and Marquette. Communication has hitherto depended on boats arriving once or twice a week in the season. Three wireless telegraph companies now have stations in Chicago, and one of them has sixty-five steamships on the lakes equipped with its apparatus.

There are not less than 800 amateur wireless telegraph stations in Chicago, and the Wireless Club had 100 members in July, all operators of stations.

The chief signal officer of the army states that there are now in the army service 39 wireless telegraph stations, 13 in the United States, 9 in Alaska, 5 in the Philippines, 5 on harbor tugs and 7 on army transports. The Signal Corps is also installing a wireless telephone equipment.

The success of wireless telegraphy in saving life at sea and on ships in peril led to the introduction in Congress of measures requiring passenger steamers to carry proper equipment and operators. The steamer *Kentucky* from Newport News for St. Lucia, West Indies, signaled by wireless that she was in distress and the *Alamo*, 65 miles distant at once went to her assistance, saving a crew of 45 men. This is one of numerous instances. A contract was made by the Lloyd Braziliero plying between New York and Brazilian ports, for the equipment of 21 steamers and of 8 towers along the Brazilian coast.

The French Government having maintained communication from the Eiffel Tower over distances of 2,000 miles and with stations on the coast of Algeria and Tunis, has undertaken the construction of stations in French Guinea, Liberia, and Timbuctoo, besides planning stations in the French Congo. On May 23, the government also took up the wireless transmission from the Eiffel Tower of the exact time as determined at the Paris Observatory. In addition the pendulum at the Tower is used to transmit by means of wireless apparatus, a Hertzian wave impulse every second, so that longitude may be determined at distant points. The latest refinements of wireless service are those in the equipment of the Wellman balloon for its attempted trip across the Atlantic.

Block signaling is an important branch of telegraphy, and on Jan. 1, 1910, there were 65,758 miles of railroad in the United States operated under the block signal system. Of this mileage 14,237.7 was automatic and 51,520.3 manual.

By act of Congress, telegraph and telephone companies are now placed under the jurisdiction of the Interstate Commerce Commission, which is authorized to determine the reasonableness of rates. Penalties of from $100 to $2,000 are imposed for granting franks or passes for the transmission of messages.

Telephony. — Jan. 1, 1910, there were in use throughout the world, approximately 10.270,000 telephones, of which over 7,000,000 are in the United States, with 16,549,000 miles of wire. The telephone investment of the world is $1.500,000.000, of which more than half is in this country. The estimated number of telephone conversations in the world in 1909 was about 19,000,000.000, of which over 13,000,000,000 are credited to the United States, which has eight times as many telephones in service as Germany. With regard to density of telephone service, Los Angeles, Cal., leads with 61,000 telephones and 240,000 inhabitants as compared with Stockholm, Sweden, which has 58,000 stations among 340,000 inhabitants. During the first six months of 1910, the Bell system gained new subscribers at the rate of 616,000 per annum.

Automatic telephony has been quite generally adopted, and has, it is stated, 250,000 connected subscribers.

In a paper read before the Electric Club of Chicago on Feb. 9, Mr. Angus Hibbard stated that the average cost of a telephone in Chicago to-day is $39.42 as compared with $126.19 in 1895. The average gain is 30,000 subscribers a year, to effect which the company has to install 60,000 telephones annually. In reaching the present service, the company has dug under 614 miles of streets for its underground wires, and has over 600,000 miles of wire buried. One peculiar feature of the Chicago telephone service is that more than half the instruments are of the nickel pre-payment type.

Telephony for train dispatching has gained greatly during the year. On Jan. 1, 293 railroads were using the telephone wholly or in part for the transmission of train orders over 26,344 miles of road.

A feature of telephone practice has been the general introduction on circuits, of Pupin loading or impedance coils to secure better speech transmission. These are now in use on a number of lines in America with excellent results and have also been adopted in Germany.

A novel development of central exchange telephony has been introduced in Detroit in the shape of "wayside" stations of which there are now over 500. These stations are installed at various street corners and public places all over the city. For the use of any of these stations, regular subscribers of the company on payment of fifty cents additional per month are furnished with a pocket combination receiver and transmitter set weighing only a few ounces. The service is freely used, and no point within the city limits is now more than a quarter mile from a "wayside" station.

Electric Traction.—One of the most important events in electrical railway work during the year was the completion and opening of the tunnel system of the Pennsylvania Railroad under Manhattan Island across the East River and under the Hudson River to New Jersey. Electric trains from the new depot are now in regular operation in both directions. The year was signalized by other notable tunnel work, such as the electrification of that part of the main line of the Great Northern Railway passing through the heart of the Cascade Mountains. The Cascade tunnel is 107 miles east of Seattle, and is about 14,000 feet long. Operation by steam locomotives was costly, and dangerous as well, on account of soot and gases; two to four of the heaviest engines making a speed of only seven or eight miles an hour up grade. Current is now transmitted thirty miles from a water-power plant to electric locomotives, now four in number for the whole service. Each locomotive has four 25-cycle three-phase induction motors. A year's operation shows the service to be very satisfactory. Plans have been prepared for the electrification of the Hoosac tunnel. The tunnel section is 25,000 feet in length.

The New York, New Haven and Hartford Railroad has authorized the equipment of its Harlem River branch with an 11,000 volt single-phase system, and this will also be applied to the New York, Westchester, and Boston service with motor cars instead of electric locomotives, from 75 to 100 motor cars being required. The Midi Railroad of France is installing the single-phase system on portions of its line, deriving current from four water powers of a total 38,000 kilowatts capacity. The current is to be generated at 60,000 volts pressure and reduced to 12,000 volts for use by the motor cars and locomotives. In Italy, on the other hand, the three-phase system has now been adopted by the government for several lines now in process of construction, the ten lines calling for an expenditure of $12,000,000. The French Government, to relieve the congestion at the Saint Lazare station and in the Paris belt line, has decided to equip the system for electrical operation, experience having shown that the capacity of a terminal may be increased about thirty-three per cent by the substitution of electric multiple unit trains for steam operated ones. The nation has appropriated $40,000,000 for the project. Another large electric railway system, 400 miles in length, is now being built in Brazil in the state of Minas Geras to carry iron ore.

In the United States an important development has been the equipment of several roads with the high voltage direct current motors in preference to the alternating system. One of the large electrical manufactories reported in May that it had equipped fourteen roads with 1,200 volt direct current motors of a total capacity of more than 66,000 horse-power. This voltage is practically double that of the older standard direct current used on trolley lines.

The ordinary trolley systems have grown apace. Statistics published in Aug. gave for the street and elevated railway systems of the United States, 1,252 in number, a total capitalization of $4,652,735,633, an increase of nearly $100,000,000 over 1909. The service is now practically all electric. There were 40,490 miles of track and 91,153 cars. The gross earnings are believed to exceed $550,000,000. Ten systems alone showed a total of $134,615,487. An increasing amount of this income was derived from freight, but the bulk of the business to an overwhelming degree was short-haul passenger traffic. During the year a trolley trip of nearly 1,100 miles was taken over connecting interurban and city lines, between Syracuse, St. Louis, and Chicago, and it is now possible to go westward by trolley from Buffalo to Milwaukee.

Trackless trolleys have attracted attention during the year, but have not been introduced extensively. The leading system is that of Vienna, Austria, in connection with the municipal tramways. Four cars, each capable of carrying 24 passengers, do an average daily service of 75 miles at a cost of from $5.20 to $6.80 per car. The cars have a contact trolley like those of street cars, but running on the wire instead of pressing upward. Passing cars interchange trolleys. The system is now in use also at Weidling, near Vienna; Gmünd, Lower Austria; and at Budweis, Bohemia; and has lately been installed at Pressburg, Hungary, with a system of 7 cars and 36 miles of line at a cost of $60,000.

The monorail has also been taken up, but a system installed at City Island, N. Y., collapsed in July, injuring 20 of the 100 passengers in the car. The accident is attributed to haste in constructing the peculiar track in order to comply with the terms of the franchise. Early in the year a license for the Brennan monorail gyroscope car system was granted for operation for 100 miles of road to connect the Alaska Central Railroad with rich coal fields 185 miles north of Seward.

Storage-battery cars are by no means new to the art, but have hitherto been uniformly a failure owing to the cost of operation and repairs. The attempt to use them has been renewed in 1910 with the Edison storage-battery car on an old crosstown road in New York City. The car has two motors of 5 horse-power each and 100 Edison iron-nickel cells for driving, and 5 cells for lighting. It carries ordinarily 41 passengers, 26 being seated. Up to the middle of July the car had made 10,000 car miles without repairs to car or battery. The test is regarded as successful.

Electric Automobiles.—No electrical apparatus has shown a more rapid advance in 1910 than the electric automobile, owing to its greater favor with the public and its adoption by central station companies as a means of increasing their output of current. It is estimated that probably as many as 25,000 are now in operation, increasing at the rate of 5,000 a year.

Electric trucks and delivery wagons have been introduced in large numbers. Aug. 12 sixty-nine motor trucks of all kinds were entered in a competitive run from Philadelphia to Atlantic City and back. The distance is 60 miles. The cost of current was put at four cents per kilowatt hour, and the heaviest vehicles, carrying 7,000 pounds, in some instances showed a cost per ton mile as low as $0.00792.

Dr. A. E. Evans, of Columbus, O., stated that from April, 1905, up to the present year, in using an electric vehicle, he made with it a speedometer record of 87,715 miles. At Rochester, N. Y., a 3.5-ton electric truck has been used regularly by a nursery, four miles from the city, in delivering trees and shrubs, and in the harvest season to carry hay and wheat. One load was 617 bundles of wheat yielding 45 bushels. Another innovation is the electric hearse put into service in Chicago during 1910 by a firm of undertakers, designed to travel 50 miles on one charge. The year witnessed also the building of several gasoline-electric vehicles, one of which of the 5-ton type, on Aug. 16, on the Indianapolis speedway, made a speed of 26 miles an hour, carrying 9,000 pounds of gravel in sacks. The day previous a similar truck acting as tractor for six wagons, moved a total load of 50 tons. These trucks have a gasoline engine direct connected to the electric generator whose current is delivered to four motors, one on the axle of each wheel.

Miscellaneous. — Further advances were made in the separation and use of radium, notably by Madame Curie. The price of radium was brought down to $2,100,000 per ounce. A radium bank was established in London in Jan. for the loan of radium to scientists and physicians, as much as $200 being charged for the use of 100 milligrammes for one day. A safe was built for the British Radium Corporation, by Chubb, with a capacity of 100 pounds, which would be worth $5,000,000,000. To prevent radium emanations a 3-inch wall of lead is built within the steel shell, and other protective devices are provided. Great progress was made in electric furnaces, particularly for iron ore reduction. About 100 electric steel-making furnaces are in operation—66 being arc furnaces and 34 of the induction type. The largest rating of an induction furnace is 10 tons, and the largest rating of two American arc furnaces is 15 tons. The total charge of all the furnaces is 350 tons, requiring an energy consumption of 50,000 kilowatts. Electric lifting magnets were extensively employed, the most notable instance being the use in raising 15,000 tons of nails, hoops, etc., from a sunken barge in the Mississippi River at New Orleans, current being furnished by the local central-station company. Report was made to the American Electro-Chemical Society of the successful distillation of turpentine by electricity in a commercial plant at Vancouver, B. C. To the Society of Arts, Sheffield, Eng., description was given of a practical method of electroplating with powder, even with such metals as nickel. Experiments in France demonstrated the ability of the ultra violet light of the mercury arc vapor lamp to sterilize water, independent of the temperature, but varying with the kind of bacteria. Dr. Eugene Doyen communicated to the International Congress of Physiotherapy a report on his alleged successful treatment of cancer with electrical heat, eliminating the need of the knife in all lesions accessible to the current. The cancereous cells are said to be destroyed at a temperature of 50° to 55° C. Prof. S. P. Thompson, in April, described before the Royal Society methods of actually producing physiological effects with an alternating magnetic field, such effects of magnetism on the body having previously been sought in vain. With the head inside a coil in the dark, or with the eyes closed, a faint flickering illumination, colorless or of a slight bluish tint is perceived. Electric "spot" welding has come into prominence as distinguished from butt welding—spot welding being the union of overlapped sheets with comparatively large surface areas of metal in contact. At Gothenburg, Sweden, a floating plant for electric welding has been put in service so that it can be towed alongside any steamer needing repairs, and work can be done on such steamer at two points simultaneously. The Cahill system of delivering music telephonically from currents produced by a system of small alternating current generators was greatly improved and simplified, increasing the power and breadth of the effects and the range of expression. The improvements include a new sensitive telephone receiver, a simplified keyboard for the performer, and a less expensive switchboard for the combinations. A new system of transmitting photographs electrically includes a half-tone photograph printed on tinfoil, arranged to be revolved on a metal drum over which travels an iridium stylus. Every time the transmitting stylus comes in contact with the clear part of the foil electricity flows to the receiver and a black mark is made upon chemical paper mounted on a drum traveling at the same rate. The transmitting apparatus thus sends into the telegraph line a series of impulses, whose periods of duration are determined by the width of the lines composing the photograph. (See also XXIV, *Chemistry and Physics.*)

MECHANICAL ENGINEERING

AUTOMOBILES

Coker F. Clarkson

Nearly all pioneer automobile inventors, designers or builders started in the same general way. For sound engineering reasons certain paths of merit have been followed. As a result of many years' work by the best engineers, a popular design for large gasoline cars has resulted, after long trial of different features of construction separately appearing in the early eighties, such as the joint production of Peugeot and Levassor in the early nineties, and the productions of Renault, Maybach, Bouton, and some American engineers. The past several years have seen a substantially established arrangement in small gasoline cars, wherein other features more largely the creation of American engineers are dominant.

The automobile industry called upon many branches of engineering—mechanical, electrical, and metallurgical—to surpass at a moment's notice the highest point of achievement reached by long years of growth. It has sprung up like a mushroom, outstripping the detail engineering development which normally accompanies gradual growth.

As to the relative merit of metals used in foreign and American cars, a leading American metallurgist has said: "Into my laboratory have come samples of both foreign and American steel. I have yet to see any foreign steel that has excelled ours of the same grade. And I have yet to see any foreign steel being used commercially whose counterpart has not also been commercially used here. For several years makers of our highest grade cars have been using these finest qualities of steel." Good, bad, and indifferent cars are made both here and abroad.

Until the last few years a greater part of the designing of automobiles has been done on the cut-and-try method; the formulæ laid down by such men as Kent, Union, and Thurston were of but little use; and those that could be used had to have new constants, which varied greatly with the opinion of the designers. Many times no formulæ could be found to fit the conditions, and the designers had to work them out for themselves. The vast improvement in metallurgy has given us grades of metal producing test results as to tensile strength, elastic limit, reduction of area, elongation and fatigue, that a few years ago would have been considered impossible; this has made many a formula obsolete.

Standardization has been a cherished dream of the motoring fraternity ever since the industry began to take shape. Standardization does not make for sameness in cars and their components. It merely means an understanding between makers of cars, and parts and accessories thereof and of material therefor, carrying benefits similar to those accruing from the adoption of standard weights and measures, valuations of specie, or of any other systems serving the mutual convenience of those who work together, although in business rivalry, toward the same end; bettering quality, reducing cost, and improving deliveries of raw materials, parts, accessories and finished cars. Instead of a chaos of minute and nearly always immaterial differentiations of composition, dimension, design, and treatment, reasonable uniformity of manufacturing conditions is possible.

Persistent application for several years by the most capable engineers working jointly in the mechanical branch of the Association of Licensed Automobile Manufacturers, resulted in the establishment of but relatively few standards, some of which have not been widely adopted. These are known as the A. L. A. M. screw standard, and drill sizes for the same, specifications for materials and heat-treatment of the same, spark plug, solid, and adjustable yoke and eye-rod ends, and horse-power formula. Recently the Society of Automobile Engineers, in existence for five years, took over the engineering department of the Gasoline Automobile Manufacturers' Association; so that the work of the society, which includes in its membership five hundred engineers in the automobile field, now includes the whole subject of standardization. Phases now in hand by the Society of Automobile Engineers standards committee, are: the specification and heat-treatment of automobile materials; the indexing and digesting of automobile engineering literature; the compilation and publication of an automobile engineer's handbook; seamless steel tubing; sheet metal; lock washers; round-cornered square holes and keyways; practice in plain and anti-friction bearings; wood-wheel dimensions, and fastenings for solid tires; shackle bolts; carbureter flanges, outlets, bolt hole center distances, cap screws; gasoline connection, throttle levers and holes in same, water connections, and gaskets; automobile nomenclature; frame sections; leaf springs and fittings; record for motor characteristics; determination of constants for gear formulæ; tire efficiency. The matter of sheet metal alone involves the consideration of the chemical composition, dimensions, and standard measurement of clutch discs, brake drums, body panels, mufflers, radiators, fenders, hoods, sod pans, fan blades, hub caps, dashes, steps, running boards, miscellaneous stampings, and many other parts.

Howard E. Coffin, president of the Society of Automobile Engineers, recently said, "We see much in the press about the standardization of the modern motor car. There may be something in this term, if by it we mean that every car has a motor, a clutch, a transmission, a frame, springs, and axles; but it is not any of these big generalities which cause us the trouble or which need standardizing. It is the little things—the little things which are different merely because they *are* different and for no good reason—which keep the purchasing departments in hot water and delay production. It is not the unavoidable act of Providence which impedes the output—it is the irresponsible draftsman or designer who is permitted to draw upon his imagination for specifications throughout the entire range of theoretical possibilities. Individuality in design is one thing and highly desirable, and should be encouraged. Individuality in specification is largely useless and should be restricted within reasonable limits."

Torpedo Bodies.—A general innovation in this year's models has been the so-called "torpedo," "gunboat," or "fore-door" bodies. This has come as a result of the desire for effectiveness, new style, and protection from dirt and cold. For a few years there have been in this country occasional models having low front doors; these have long been quite common in England. The current form of torpedo body contains at least the germ of a permanent type of worthy body.

Car Production in 1910.—It is impossible to get complete data as to the number of automobiles in use in the United States at the present time, as in the case of states where state registrations are made there are many duplicate registrations, and in some states where there is no such registration, the registrations with county officers, etc., have not been collected. It can be estimated conservatively, allowing for cars made prior to 1910 which have gone out of use or been exported, that there are 250,000 gasoline, electric, and steam automobiles running in this country. A close estimate of the number of gasoline cars made during the 1910 season is 180,000. It is forecasted that in the season of 1911 150,000 such cars will be made.

As further evidence of the remarkable growth of the automobile industry, official statistics show that in 1910 there were 280 concerns engaged in the manufacture of automobiles and parts, as compared with 101 in 1905; that the capital invested was $275,000,000, as compared with $56,000,000 in the earlier year; that the value of cars made had increased from $56,000,000 to $275,000,000; and the number of employees from 15,000 to 140,000. There were besides 38,000 persons employed in the selling agencies.

The 1910 Opening Shows. — The Tenth International Automobile Show, under the auspices of the American Motor Car Manufacturers Association (lately disbanded), was opened at Grand Central Palace, N. Y., on New Year's Eve. Instead of reducing the prices of cars of the previous years, most makers of medium-priced and low-priced cars had, it then developed, added $50 to $200 to prior prices. The increased use of *en bloc* cylinder castings was a feature of the cars exhibited. There were eighty-four exhibitions of complete machines. Better brakes, clutches, materials, and design were in evidence; larger wheels and tires prevailed; and a more extended use of the magneto was evident.

Jan. 8–15, 1910, the Tenth National Automobile Show, conducted by the Association of Licensed Automobile Manufacturers, at Madison Square Garden, N. Y., was held. There were three hundred and twenty-three exhibits, including gasoline, electric, and steam, pleasure and commercial vehicles, buses, taxicabs, ambulances, fire wagons, chassis, bodies, motorcycles, and all sorts of parts and accessories, etc. The lowest-priced car was $750; the highest, $7,500.

Yearly Increase of Production.—In the summer of 1909 there was handed down in the United States Circuit Court for the Southern District of N. Y., a decision that United States Letters Patent No. 549,160 covered the modern gasoline automobile. The effect of this was that most of the prominent makers of gasoline cars, who had not theretofore done so, took license under this patent, and became affiliated with the Association of Licensed Automobile Manufacturers. During the year this association issued a statement showing the number of cars produced each year by its members.

In 1903, 10,576 cars were produced; in 1904, 13,724; in 1905, 20,787; in 1906, 29,320; in 1907, 34,568; in 1908, 40,579; in 1909, 94,891, an increase of 130 per cent.

The modern automobile represents one of the highest achievements of mechanical engineering. No other industry, probably, has contributed so much to the development and refinement of machine tools, new, quick, and accurate manufacturing methods, and of materials possessing enormous strength and other new properties. Each part has been the subject of long and accurate tests and study, to bring about simplicity, strength, lightness, through proper distribution of material, according to mechanical laws. This refinement is always going on and no detail, however trifling, is overlooked in the steady march toward perfection. This is an index of the real task before the accessory and parts manufacturer, as well as the car builder, and indicates clearly the field in which manufacturers of merit will survive. (*See also Electrical Engineering; Gas Engines.*)

PROGRESS OF AERONAUTICS DURING 1910

Roger B. Whitman

Apparatus for aerial navigation may be divided into two distinct classes: those *lighter than air* and those *heavier than air*. The former may be further classified as *free spherical balloons*, which have no means of progress other than air currents, and *dirigible balloons*, which are provided with motors, and may be driven and directed in accordance with the wishes of the pilot. The use of lighter-than-air and heavier-than-air apparatus is known as *aerostation* and *aviation* respectively. These classifications are employed in the following discussion.

Ballooning.—Up to Jan. 1, 1910, the best flights made by free spherical balloons were the following:

World's record, distance: Comte Henri de la Vaulx and Comte Castillion de Saint Victor, Vincennes, France, to Korostychew, Russia (1,193 miles), in 35¾ hours, Oct. 9–11, 1900.

United States record, distance: Oscar Erbsloh and H. H. Clayton, St. Louis, Mo., to Bradley Beach, N. J. (872¼ miles), in 41 hours, Oct. 21–23, 1907.

World's record, duration: 72 hours, made by Col. Theo. Schaeck, a Swiss military officer, from Berlin, Germany, on Oct. 11, 1908, landing in the sea off Norway.

United States record, duration: Clifford B. Harmon and Augustus Post, St. Louis, Mo., to Edina, Mo., 48 hours 26 minutes, in St. Louis Centennial Balloon Race, Oct. 4, 1909.

World's record, altitude: James Glaisher, Sept. 5, 1862, claims to have reached 37,000 feet. This is now doubted. Professors Berson and Suring have reached an altitude of 34,000 feet.

United States record, altitude: 24,200 feet, reached by Clifford B. Harmon and Augustus Post, St. Louis, Mo., to Edina, Mo., Oct. 4, 1909. Not official.

The only change made during 1910 was the establishment of a new United States record for distance, as follows: *United States record, distance:* Allan R. Hawley and Augustus Post, St. Louis, Mo., to Lake Tschotogama, near Peribonka, Que., 1,171.3 miles, Oct. 17–19, 1910, in 45 hours 44 minutes.

About 100 balloon ascensions were made during 1910, not counting those of the Gordon Bennett cup race and the elimination trials. The most notable were the following:

Feb. 28th, San Antonio, balloon "New York," Harmon pilot; 550 miles; greatest altitude 12,000 feet.

Apr. 11th, Jackson, Miss., balloon "Cleveland," Stevens, pilot; 35 miles in 3 hours; greatest altitude 8,500 feet.

May 2d, St. Louis, balloon "Missouri," Assman, pilot; 129½ miles in 4 hours.

May 9th, Quincy, Ill., balloon "Viking," Forbes, pilot; 363¼ miles in 19 hours 55 minutes; greatest altitude 20,600 feet.

May 19th, St. Louis, balloon "Centennial," Honeywell, pilot; 409 miles in 22 hours; greatest altitude 14,800 feet.

May 20th, North Adams, balloon "Cleveland," Stevens, pilot; 219 miles in 11 hours 52 minutes; greatest altitude 11,000 feet.

June 26th, Philadelphia, balloon "Philadelphia II," Dr. Eldridge, pilot; altitude 17,050 feet.

June 18th, St. Louis, balloon "Centennial," Honeywell, pilot; 354 miles.

July 14th, Hamilton, O., balloon "Drifter," Collins, pilot; 295 miles in 10½ hours.

July 20th, Philadelphia, balloon "Philadelphia II," Dr. Eldridge, pilot; 231¼ miles in 12 hours 5 minutes; greatest altitude 10,500 feet.

July 27th, Pittsfield, balloon "Springfield," Van Sleet, pilot; 107 miles in 5 hours 15 minutes.

July 28th, Hamilton, O., balloon "Drifter," Collins, pilot; 115 miles in 14 hours 25 minutes.

July 30th, Canton, O., balloon "Buckeye," Wade, pilot; 132 miles.

Aug. 3d, Philadelphia, balloon "Philadelphia II," Dr. Eldridge, pilot; 303.8 miles in 11 hours 2 minutes.

Aug. 10th, Lowell, balloon "Boston," Benton, pilot; 107 miles in 7¾ hours.

Aug. 16th, Philadelphia, balloon "Philadelphia II," Dr. Eldridge, pilot; 222.37 miles in 11 hours; greatest altitude 14,000 feet.

The Gordon Bennett Race.—As a preliminary to the fifth competition for the Gordon Bennett ballooning trophy, and to select a team of three pilots to defend the trophy for the Aero Club of America, an elimination race was held at Indianapolis, Sept. 17th. As a result, the pilots selected were Hawley, Honeywell, and von Phul. The Gordon Bennett race was started at St. Louis, Oct. 17th, and the results were as follows:

"America II" (America)—Allan R. Hawley, pilot; Augustus Post, aide; landed at Lake Tschotogama, near Peribonka, Que., distance 1,171.3 miles in 45 hours 44 minutes.

"Düsseldorf II" (Germany)—Hans Gericke, pilot; S. F. Perkins, aide; landed at Kiskisink, Que., distance 1,131 miles in 42 hours 24 minutes.

"Germania" (Germany)—Hugo von Abercron, pilot; August Blanckertz, aide; landed at Coocoocache, Que., distance 1,079 miles in 40 hours 6 minutes.

"Helvetia" (Switzerland)—Theodore Schaeck, pilot; A. Armbruster, aide; landed at Ville Marie, Que., distance 826 miles in 36 hours 33 minutes.

"Hamburg III" (Germany)—Lieut. Vogt, pilot; W. F. Assman, aide; landed in Lake Nipissing, Ont., distance 766 miles in 27 hours 46 minutes.

"Azurea" (Switzerland)—Emil Messner, pilot; Leon Giraudau, aide; landed near Biscotasing, Ont., distance 756 miles in 38 hours 53 minutes.

"Isle de France" (France)—Alfred Leblanc, pilot; Walther de Mumm, aide; landed at Pogamasing, Ont., distance 722 miles in 35 hours.

"St. Louis No. 4" (America)—H. F. Honeywell, pilot; J. W. Tolland, aide; landed at Hillman, Mich., distance 552 miles in 28 hours 34 minutes.

"Condor" (France)—Jacques Faure, pilot; E. G. Schmolck, aide; landed at Two Rivers, Wis., distance 413 miles in 20 hours 24 minutes.

"Million Club" (America)—S. Louis von Phul, pilot; J. M. O'Reilly, aide; landed near Racine, Wis., distance 317 miles in 14 hours 32 minutes.

The northeasterly course of the winners took them over the Canadian wilderness, and the descent was made on the edge of the Labrador region. They still had six bags of sand, but had the balloonists proceeded farther they would have faced the peril of starvation on their return trip to civilization. As it was, they made a march of nearly five days before encountering trappers who could guide them to a settlement. Previous contests for the Gordon Bennett trophy have resulted as follows:

Paris, 1906, Lieut. F. P. Lahm (America), 410 miles.

St. Louis, 1907, Oscar Erbsloh (Germany), 872 miles.

Berlin, 1908, Col. Theo. Schaeck (Switzerland), 753 miles.

Zurich, 1909, E. W. Mix (America), 696 miles.

The 1911 contest will be held in the United States, the starting point probably being St. Louis.

Dirigible (Steerable) Balloons.—The construction of dirigible balloons has undergone great development in recent years, but the movement has been confined to the European countries. At the beginning of 1910, but seven dirigibles were owned in the

United States, six being one-passenger machines used for show purposes by Stroble, Beachey, etc. The other was the Baldwin machine, owned by the Government and intended for war purposes; practically no use has been made of it, however. The European dirigibles are chiefly government-owned, and in consequence it is difficult to secure accurate data concerning them. In Jan., 1910, it was reported on good authority that the number of operative machines in Europe was twenty-five, with fifteen under construction.

Dirigibles are divided into three classes: rigid, semirigid, and nonrigid. The best known of the rigid types is the Zeppelin, in which the form of the envelope is maintained by the aluminum framework over which the cloth is drawn. In the Lebaudy, of the semirigid type, the car is suspended from a rigid flat framework, which forms the lower portion of the gas bag. The Parseval machine, which is typical of the nonrigid type, employs a cylindrical or elliptical gas bag, the form being maintained by the pressure of the gas; the car is supported by a netting similar to that of a balloon. In the semirigid and nonrigid types bags are placed inside of the gas bags into which air is forced by a blower, the volume inclosed by the gas bag thus being maintained constant. The most interesting developments during 1910 were as follows:

March. Italian war dirigible flew from Bracciano to Naples and return; distance 325 miles; average speed 22 miles per hour.

Several flights by German dirigible "Parseval V," one lasting 3½ hours.

"Zeppelin II" destroyed by heavy wind.

June 19th. The German "Clouth" airship flew from Cologne over the French and Belgian frontiers unnoticed, landing near Brussels. The distance covered was about 125 miles, and the duration 5 hours 20 minutes.

June 2d. The dirigible "Deutschland" (Zeppelin VII), sailed from Friederichshafen to Düsseldorf, 311 miles, in 9 hours, carrying a crew of 13.

June 24th. "Deutschland" undertook first passenger trip, and three hours were spent cruising around Düsseldorf. She carried 20 passengers and a crew of 13.

June 28th. "Deutschland" destroyed. She was caught in a storm, and as the gasoline was exhausted she was helpless. She finally settled on the trees of a forest. Her crew of 12 and her 21 passengers were uninjured.

July 13th. Nonrigid dirigible "Erbsloh" destroyed by a fall of 900 feet, due to the bursting of the envelope. The five passengers, including Oscar Erbsloh, the designer, were killed.

July 13th. "Parseval VI" sailed from Bitterfield to Dresden.

July 13th. "Parseval VII" sailed from Breslau to Alshude.

Sept. 14th. "Zeppelin VI" destroyed by fire, which followed an explosion that occurred while she was being warped into her shed. In the preceding 18 days she had made 34 trips, covering 2,000 miles and carrying 300 passengers.

Oct. 15th–18th. The dirible "America" broke all records in her attempted trip across the Atlantic. She was in the air for 71 hours, and covered 1,008 miles. See account of her trip elsewhere in this section.

The Wellman Trans-Atlantic Expedition.—After months of preparation the Wellman airship was launched at Atlantic City on Oct. 15th, at 8.05 a.m., and started on a voyage that was expected to terminate in Europe. The attempt was the outgrowth of the expeditions planned by Walter Wellman in previous years to seek the North Pole, and the arrangements and details of his craft were the results of those trials. The length of the gas bag was 228 feet and its diameter 52 feet, and when inflated with hydrogen it had a lifting capacity of 23.650 pounds. The car was 156 feet long, the central 75 feet, being a cylindrical gasoline tank. The power plant consisted of two 80 horse-power, eight-cylinder engines, each driving two propellers. The forward propellers were 11 feet 8 inches in diameter, and the after ones 10 feet 4 inches, and the speed was expected to be 26 miles per hour. Under the car was suspended a life boat, and a wireless telegraph outfit was carried. Suspended from the car was a steel cable, on which were strung 30 cylindrical gasoline tanks, the total length of this "equilibrator," as it was called, being 330 feet. The weights were such that with normal lifting capacity about one half of the equilibrator was expected to drag on the ocean surface; and it was the purpose of the device to check any abnormal lift due to expansion of the gas by the increase in weight when it was raised clear of the water. The propellers were driven by bevel gears and were so arranged that they could be swung bodily about in a circle, thus making it possible to employ their thrust in any desired direction. As no trial trip was made, a weakness of the keys of the gears did not become apparent until the trip was in progress. In consequence of the loss of power, control of the ship was lost, and she was blown out of her course. The airship was finally abandoned when headed for Bermuda, 7 a.m., Oct. 18th, the crew being picked up by the steamship *Trent*. Her trip lasted for 71 hours, during which she covered 1,008 miles. These figures stand as records, the best performance by Zeppelin being 900 miles in 37½ hours. The crew consisted of Walter Wellman, Melvin Vaniman, chief engineer; Murray Simon, navigator; J. R. Irwin, wireless telegraph operator, and a mechanic.

AVIATION

During the year 1910 the art of aviation made such extraordinary advances that the history of industrial progress can offer few comparisons. Until the Wright Brothers made their public flights in 1908, experimental work had been carried on in a desultory manner only, and with practically no tangible results; but with the demonstrations then made the art entered its period of real development. The Wright method of wing warping was recognized as embodying the solution of the problem of securing lateral stability, and the general principles were adopted. Previous to 1908, the longest recorded flight with a heavier-than-air machine was 38 minutes, 3 seconds, by Wilbur Wright, at Dayton, O. During 1908, the Wrights made eleven flights exceeding an hour in duration, and during 1909 the feat was performed fifty-six times by nineteen aviators. Hour flights during 1910 have been so numerous that no record of them has been kept, but it is known that by June 30th the number of aviators who had made continuous flights of an hour or more was seventy-six. These facts indicate the remarkable advance made in aeroplane construction and handling during this period. For purposes of comparison, the world's records in aviation, Jan. 1, 1910, will be of interest.

World's record, one-man duration and distance: Henry Farman, at Mourmelon, Fr., Nov. 3, 1909, 4 hours 17 minutes 53 seconds, covering 234.2 kilometers. Won the Michelin cash prize and trophy for 1909.

World's record, two-man duration and distance: Orville Wright and passenger, Capt. Englehardt, Sept. 18, 1909, at Berlin, Ger., 1 hour 35 minutes 47 seconds.

World's record, two-man speed: Henry Farman, with one passenger, at Rheims, Fr., Aug. 28, 1909, 10 kilometers in 9 minutes 52 1-5 seconds.

World's fastest average speed: Leon Delagrange, 49.99 miles per hour at Doncaster (Eng.) aviation meet, Oct. 26, 1909. Unverified: Santos Dumont made 59.61 miles per hour at St. Cyr, Fr., Sept. 13, 1909.

World's longest (time) cross-country flight: Col. S. F. Cody, at Laffans Plains, Eng., Sept. 8, 1909, 1 hour 3 minutes, covering about 40 miles..

World's three-man duration, distance and speed record: Henry Farman, with two passengers, Rheims, Fr., Aug. 28, 1909, 10 kilometers in 10 minutes 39 seconds.

World's altitude record: Hubert Latham, Chalons, Fr., Dec. 1, 1909, 1,486 feet, in an Antoinette monoplane.

At the close of 1910 the records stood as follows:

World's one-man distance record: Maurice Tabuteau, Buc., Fr., Dec. 30th, 362.66 miles in 7 hours 45 minutes, in a M. Farman biplane.

World's two-man duration and distance record: Lieut. Camerman and passenger, France, Dec. 22d, 147 miles in 4 hours 2 minutes.

World's fastest average speed: Alfred Leblanc, 67.868 miles per hour, at Belmont Park, Oct. 29th, Blériot monoplane.

World's cross-country flight record: Walter Brookins, from Chicago, Ill., to Springfield, Ill., 175¾ miles in 5 hours 51 minutes actual time; elapsed time, 7 hours 12 minutes, in Wright biplane.

World's sustained cross-country flight record: Arch Hoxsey, from Springfield to St. Louis, 86 miles in 2 hours 45 minutes, Oct. 8th.

World's three-man duration, distance and speed record: Mamet and two passengers, 56 miles in 1 hour 36 minutes 4 seconds, at Rheims, Fr., July 10th, Blériot monoplane.

World's altitude record: Arch Hoxsey, 11,474 feet, at Los Angeles, in Wright biplane, Dec. 26th.

World's one-man duration record: Henry Farman, Mourmelons, Fr., 8 hours 23 minutes, covering 289 miles, Dec. 18th.

Paulhan.—A comparison of these sets of figures is convincing, but an appreciation of the aviation movement cannot be complete without taking into consideration certain performances of a spectacular nature that depended on correct machine construction as well as the utmost skill of control. At 5.31 P.M. on April 27th, Louis Paulhan started from London in a Farman biplane, in an attempt to win the prize of £10,000 offered by Lord Northcliffe for the first flight to Manchester. Although twenty-four hours and two stops were allowed for the 185 miles, Paulhan covered the distance in twelve hours, and made but one stop. Not the least noteworthy feature was his landing on unfamiliar ground after darkness had set in.

Curtiss.—On May 29th Glenn H. Curtiss left Albany, N. Y., for New York City, for a prize of $10,000 offered by the New York *World* to the first aviator who duplicated the trip of Fulton's *Clermont.* The total distance is 142½ miles, and Curtiss covered it at the rate of fifty miles per hour. Paulhan's average speed on the London-Manchester trip was less than forty-four miles per hour. Curtiss made two landings, at Camelot and at Spuyten Duyvil, and while the latter is within the New York City limits, he continued to Governor's Island. His time to Spuyten Duyvil was 2 hours 37 minutes, and to Governor's Island 2 hours 55 minutes.

Hamilton and Others. — On June 13th Charles K. Hamilton flew from New York City to Philadelphia and back in a Curtiss biplane, covering 175 miles in a flying time of 3 hours 27 minutes. On June 2d C. S. Rolls made a nonstop flight from Dover, Eng., across the Channel to Sangatte, Fr., and return, in a Wright biplane. On Aug. 7th Alfred Leblanc landed at Issy, Paris, the winner of a cross-country race of 485.9 miles, for a prize of $20,000 offered by the Paris *Matin.* The course was Paris, Troyes, Nancy, Charleville, Mezieres, Douai, Amiens, Paris, and it was covered in six stages. There were eight starters, and of these three finished, the flying time of the winner being 11 hours 58 minutes 49 seconds.

Chavez.—On Sept. 23d George Chavez left Brig, Switz., in an attempt to reach Milan, Ity., a distance of ninety-three miles, for a prize of $14,000. The start is at an altitude of 900 feet, and the route lay over the Simplon Pass, the summit of which rises 6,592 feet above sea level. Once started, the aviator could not expect to find a landing place until the Alps had been crossed, but he made this portion of the trip in safety. He attempted a landing at Domo d'Ossola, Ity, having covered twenty-five miles in fifty minutes, but the collapse of a wing when thirty feet from the ground resulted in his injury and final death.

At the close of 1910, there are many more aviators in Europe than in the United States, but the Europeans admit that for daring, control of the apparatus, and knowledge of air currents, the Americans surpass them. The reason for this probably lies in the fact that aeroplane flights have been the principal attraction at county fairs, civic celebrations, etc., in all parts of the country, and that the aviators under engagement have felt that it was necessary to fly even under adverse conditions. Not being under the spur of necessity, the European aviators were not inclined to fly unless the weather conditions were suitable, and thus did not gain the knowledge of air currents that has been acquired by the leading American aviators. It was apparent at the beginning of the year that exhibition work offered the principal opportunity for money making, and teams were organized by the Wright Brothers and by Curtiss to take advantage of it. The Wrights, with Brookins, Hoxsey, Turpin, Johnstone, Parmelee, Coffyn, and La Chapelle; and Curtiss, with Hamilton, Ely, Mars, McCurdy, and Willard, filled engagements in all parts of the country, as did a number of others, among them Baldwin and Shriver. The desire of the American public for new sensations required the aviators to do more than make straight flights, and in consequence performances of a really thrilling nature were executed. Among these is Hamilton's "dip," in which he drops at a steep angle from a height of several hundred feet, levelling his machine and shooting upward when only a few yards from the ground. Brookins executes a "spiral dive," in which his apparatus is inclined to an extremely small angle with the vertical, and he makes the descent in circles of small radius and at high speed. This is a development of "banking," which he introduced to overcome the tendency of an aeroplane to slide sideways, or to make leeway, when rounding a turn. In turning, he inclines his apparatus to lift the outer end and to present the undersurfaces of the planes to the air; the resistance thus introduced holds the machine to her course. He has brought this to so fine a point that he has made a complete circle in 5½ seconds.

The remark made to the writer by a member of the team representing Great Britain in the race for the Gordon Bennett Aviation Cup is of more than passing interest. "We have our experts in Europe; men who stand very high in this business," he said, "but you have the Wrights, and they have forgotten more than the best of our men ever knew." This feeling is not always expressed, but it is implied, and it is a tribute that is well earned and justly deserved.

Belmont Park Meet. — The meet held at Belmont Park, Oct. 22d–31st, was by far the most important held in America during 1910. Twenty-nine aviators were present, with a total of thirty-seven aeroplanes, and men and machines were among the best of America and Europe. In point of numbers, the Rheims meet surpassed it, with seventy-six machines, and on one occasion eighteen in the air. The greatest number in the air at Belmont at one time was ten. The records established at Belmont are mentioned elsewhere, but several of the features deserve notice. One of these was Latham's flight of four laps (6.2 miles) his time for them being 1′ 36⅕″, 1′ 36½″, 1′ 36⅘″, and 1′ 36½″. This astonishing regularity evidences better than words the high pitch of development to which the aeroplane and its control have been brought.

Another remarkable exhibition was given by Moisant in a cross-country flight lasting thirty-nine minutes, in rain and fog. The speed contest around the statue of Liberty was won by Moisant, the greater part of the straight course that he chose being over Brooklyn. Grahame-White took a somewhat longer course over more thinly settled districts, and was second by forty-three seconds, although he used a Blériot machine of twice the power.

The great feature of the meet was the altitude work, and the skill displayed may be judged by the fact that Brookin's record of 6,175 feet, made at Atlantic City, July 11th, was surpassed nine times. On Oct. 26th Johnstone and Hoxsey started on altitude flights, with a ground wind of from fifteen to thirty miles an hour. As they ascended they encountered winds of higher velocity but increasing steadiness. Facing into this, and with their engines developing full power, their speed in relation to the ground decreased, until finally they were blown backward. Johnstone's machine had a speed of forty miles an hour in still air, and the force of the wind in which he was flying may be estimated by his being blown backward some forty miles in less than two hours. The maximum velocity of the wind was probably not less than seventy-five miles an hour; and this performance is further proof of the practical value of the aeroplane.

Prizes and Trophies.—Among the prizes offered for aviation performances during 1910 was one of $25,000 by the New York *Times* and the Chicago *Evening Post* for the fastest flight from Chicago to New York. A number of aviators entered for the contest, but Eugene Ely, with a Curtiss biplane, was the only one to start. Engine trouble developed, however, and he gave up after thirty miles. This contest will be held during 1911, and other prizes open for competition are $30,000, offered by the New York *World* and the St. Louis *Post Dispatch* for a flight from New York to St. Louis, and $50,000 offered by W. R. Hearst for a flight from the Atlantic to the Pacific coast. Edwin Gould has offered a prize of $15,000 for the production of a heavier-than-air machine equipped with two independent power plants and propellers, so arranged that either or both may be called on to drive the machine.

The Scientific American Trophy.—The Scientific American Trophy for heavier-than-air flying machines was offered by the *Scientific American* for annual competition under rules and regulations formulated and promulgated by the Aero Club of America in 1907.

The first trial for the trophy was held at Hammondsport, N. Y., on July 4, 1908, by the Aerial Experiment Association, of Hammondsport, N. Y. The minimum distance to be covered in 1908 was one kilometer (3,280 feet) and Glenn H. Curtiss in the "June Bug" biplane, made on this date a flight of 5,090 feet, which remained unbeaten that year, thereby winning for him the trophy for 1908.

This was also the first official public flight for a record made in the United States.

In 1909 the trophy was again won by Glenn H. Curtiss. On July 17th, he fulfilled the new conditions of the competition for that year by covering a minimum distance of twenty-five kilometers. The actual distance covered was 25.002 miles (in 52 minutes 30 seconds).

In further accordance with the deed of gift, providing that the minimum conditions for the yearly winning of this trophy shall be made progressive in their severity in conformity with the progress of aerial navigation, the 1910 conditions gave the trophy for that year to the aviator who made the longest flight—in point of distance—provided he was regularly entered for the trophy and that the distance was not less than forty miles across country.

Glenn H. Curtiss on May 29, 1910, competed under these conditions and made a flight from Albany to Camelot, near Poughkeepsie, a distance of 74¼ miles. As this flight was not surpassed by the end of the year, Mr. Curtiss therefore came into permanent possession of the trophy.

The Michelin Trophy.—Under the regulations governing competition for the Michelin trophy, it was to be awarded to the aviator, who during the year made the longest flight in a closed circuit without touching the ground. A prize of 20,000 francs (about $4,000) in cash went with the trophy at the end of the year. It was won by Maurice Tabuteau, who drove a Farman biplane for 7 hours, 45 minutes, covering 583.7 kilometers 362.66 miles). The flight was made at Buc, Fr.

Gordon Bennett Aviation Cup.—The Coupe Internationale d'Aviation, better known as the Gordon Bennett Cup, is a trophy for speed contested annually by teams representing the countries included in the Federation Aeronautique Internationale. Glenn H. Curtiss was the first winner at the 1909 Rheims meeting, and the 1910 contest was held during the meet at Belmont Park. Possession of the trophy constitutes the blue ribbon of the sport, and in an endeavor to secure it teams were sent from Great Britain and France. Claude Grahame-White, with a 100 horse-power Blériot, James Radley, with a 50 horse-power Blériot, and Alec Ogilvie, with the 30 horse-power Wright roadster, represented Great Britain, while the French team was made up of Alfred Leblanc, with a 100 horse-power Blériot, and Hubert Latham, with a 100 horse-power Antoinette. America was represented by C. K. Hamilton, with a 110 horse-power Hamiltonian, J. A. Drexel, with a 50 horse-power Blériot, and Walter Brookins, with a 60 horse-power racing Wright. The course was 100 kilometers (62.14 miles) in perimeter, and the contestants were allowed to start at any time within a space of seven hours, beginning 8.30 A.M.

Grahame-White started promptly and flew the 100 kilometers without a stop, breaking all records from 30 kilometers to 100. Leblanc started shortly after, however, and broke Grahame-White's records as fast as they were made. His speed was the greatest ever made in an aeroplane, his fastest lap working out to 67.868 miles per hour. At the beginning of the last lap, however, he ran out of gasoline, and in landing smashed his machine through colliding with a post. Ogilvie made the course with regularity, but with insufficient speed, and Latham's time was also slow through the failure of the engine to function properly. Hamilton was late in starting, and Brookins, in making a preliminary flight, fell from a height of eighty feet as a result of engine failure, his machine being smashed. John B. Moisant, with a 50 horse-power Blériot, was named as substitute and finished second to Grahame-White. The trophy therefore passed to England, and the 1911 contest will be held under the auspices of the Royal Aero Club.

American Aviation Record.—In compiling a chronological record of the aeroplane flights of 1910 it is obviously impossible to make mention of all flights, and it will be realized that the value of such a record lies in the opportunity that it offers for comparisons. Over one hundred regularly organized meets and exhibitions were held in the United States during 1910, and in addition to this there were few days when flights were not made at Mineola, Los Angeles, at the Wright and Curtiss training camps, and in other parts of the country. The record here given therefore includes only the most noteworthy performances. The results of the most important meets are given practically in full. It should be borne in mind that under the rules of the International Aeronautic Federation a lap measures 2½ kilometers (1.553 miles).

Jan. 10th–20th. Los Angeles, Cal., meet. *Altitude:* Louis Paulhan, 4,165 feet, 1st.

Chas. K. Hamilton, 626 feet, 2d.

Endurance and time: Louis Paulhan, 75.77 miles, 1 hour 58 minutes 32 seconds, 1st.

Glenn H. Curtiss, 53.38 miles, 1 hour 25 minutes 5 seconds.

Chas. K. Hamilton, 19.44 miles, 39 minutes 2-5 seconds.

Speed, ten laps: Glenn H. Curtiss, 16.11 miles, 23 minutes 43 2-5 seconds, 1st.

Louis Paulhan, 16.11 miles, 24 minutes 59 2-5 seconds, 2d.

Chas. K. Hamilton, 16.11 miles, 30 minutes 34 3-5 seconds, 3d.

Three laps, with passenger: Louis Paulhan, 4.83 miles, 8 minutes 16 1-5 seconds.

Fastest lap: Glenn H. Curtiss, 1.611 mile, 2 minutes 12 seconds, 1st.

Slowest lap: Chas. K. Hamilton, 1.61 miles, 3 minutes 36 2-5 seconds.

Quickest start from first explosion: * Glenn H. Curtiss, 6 2-5 seconds.

Start in shortest distance: * Glenn H. Curtiss, 98 feet.

Cross-country: Louis Paulhan, 45¼ miles, 1 hour 2 minutes 42 4-5 seconds.

Records for course: * Height, 4,165 feet, Louis Paulhan, Jan. 12th.

Distance, 75.77 miles, Louis Paulhan, Jan. 17th.

Endurance, 1 hour 58 minutes 32 seconds, Louis Paulhan, Jan. 17th.

Speed, ten laps, Glenn Curtiss, 23 minutes 43 3-5 seconds, Jan. 17th.

Speed, one lap, Glenn Curtiss, 2 minutes 12 seconds, Jan. 14th.

Speed, three laps, with passenger, Louis Paulhan, 8 minutes 16 1-5 seconds, Jan. 13th.

Slow speed, one lap, Chas. K. Hamilton, 3 minutes 36 2-5 seconds, Jan. 14th.

* Shortest distance in rising, Glenn Curtiss, 98 feet, Jan. 11th.

* Shortest time in rising, Glenn Curtiss, 6 2-5 seconds, Jan. 11th.

Cross-country, Louis Paulhan, 45¼ miles.

Feb. and Mar. Many flights with Wright biplane by the Signal Corps, United States Army, at the San Antonio training camp, 14 flights during Mar. gave a total of 179 minutes 22 seconds in the air.

Apr. 7th. Curtiss got off the ground in 5 4-5 seconds and in 153 feet 11 inches, at Memphis, establishing a world's record.

Apr. 23d. Curtiss got off the ground in 5 1-5 seconds at San Antonio. World's record.

Apr. 24th. Hamilton got off the ground in 3 8-10 seconds and in 70 feet, at San Antonio. World's record.

May 29th. Curtiss flew from Albany to New York City, in three stages. Albany to Camelot (Poughkeepsie), 71¼ miles in 1 hour 24 minutes. Camelot to Spuyten Duyvil, 56¾ miles, 1 hour 9 minutes. Spuyten Duyvil to Governor's Island, 14½ miles, 18 minutes. Total distance, 142½ miles. Total time, 2 hours 49 minutes.

June 11th. Hamilton flew over New York harbor for 66 minutes, only landing because darkness set in.

June 13th. Hamilton flew from New York to Philadelphia and return, in three stages. New York to Philadelphia, 86 miles, 1 hour 43 minutes. Philadelphia to South Amboy, 68 miles, 1 hour 21 minutes. South Amboy to Governor's Island, 21 miles 23 minutes. Total distance, 175 miles. Total time, 3 hours 27 minutes.

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* World's records.

June 13th. Brookins in Wright biplane made two altitude ascents at Indianapolis, the first to 2,093 feet and the second to 4,384 feet. The latter broke the world's record.

June 16th. Brookins made a complete circle at Indianapolis in 6 2-5 seconds. World's record.

June 17th. Brookins established a world's record by attaining an altitude of 4,939 feet at Indianapolis. The accumulated duration of Brookins' flights at the Indianapolis meet totaled 7 hours 59 minutes.

July 1st. Harmon established an American record for duration by making a continuous flight of 2 hours 3 minutes at Mineola.

July 11th. Brookins attained an altitude of 6,175 feet at Atlantic City. World's record.

July 11th. Curtiss ascended to an altitude of 1,500 feet in 5 minutes 52 seconds at Atlantic City.

Aug. 14th. Willard established a new American record by carrying three passengers for a quarter mile at Mineola.

Aug. 20th. Harmon flew from Mineola to Greenwich, Conn., across Long Island Sound, 19½ miles, in 30 minutes.

Aug. 23d. Brookins established record by making a complete circle in 5½ seconds.

Aug. 27th. McCurdy sent a wireless telegraph message from an aeroplane at an altitude of 700 feet, the message being received by H. M. Horton.

Aug. 31st. Curtiss flew from Cleveland to Sandusky, returning the following day. Total distance 129½ miles. Total time, 2 hours 59 minutes. Entire distance over water.

Sept. 3d to 13th. Boston-Harvard Aviation Meet. The best performances at this meet were as follows:

Duration: Johnstone (Wright), 3 hours 5 minutes 40 seconds. American record.

Distance: Johnstone (Wright), 101 miles, 389 feet. American record.

Height: Brookins (Wright), 4,732 feet.

Speed: Grahame-White (Blériot), 5¼ miles in 6 minutes 1 second.

Slow-Flying: Brookins (Wright), 5¼ miles in 13 minutes 48 seconds.

Landing, on skids: Johnstone (Wright), 5 feet 4 inches from given point. World's record.

Landing, on wheels: Grahame-White (Farman), 33 feet 4 inches from given point.

Rising: Grahame-White, 26 feet 11 inches from standing start.

Boston light prize: Twice to light and return, about 33 miles, Grahame-White (Blériot), 34 minutes 11 seconds.

Sept. 29th. Brookins flew from Chicago to Springfield, Ill., in three stages. Chicago to Gilman, 75¼ miles, 2 hours 28 minutes. Gilman to Mt. Pulaski, 86¼ miles, 2 hours 39 minutes. Mt. Pulaski to Springfield, 23¾ miles, 44 minutes. Total distance, 175¾ miles. Total time, 5 hours 51 minutes. This flight established American records for cross-country flight, and for distance in a single stage.

Oct. 8th. Hoxsey flew from Springfield to Clayton (St. Louis), 86 miles, in 2 hours 45 minutes. American record for sustained flight.

Oct. 22d–31st. Belmont Park Meet.

Passenger-carrying: Greatest live weight carried over 5 kilometers. Won by De Lesseps, 356½ pounds in 5 minutes 12.15 seconds.

Statue of Liberty prize (about 35 miles): Won by Moisant, in 34 minutes 38 seconds.

Totalization of duration: Hoxsey, 6 hours 29 minutes 21 seconds. Latham, 5 hours 9 minutes 29 seconds. Grahame-White, 4 hours 57 minutes 1 second.

Totalization of distance: Latham, 270 kilometers. Grahame-White, 267.5 kilometers, Aubrun, 147.5 kilometers. Fastest flight of 10 kilometers during the regular hourly distance events were as follows: Grahame-White, 6 minutes 2.16 seconds. Latham, 6 minutes 6.07 seconds.

Grand Altitude Prize: Won by Johnstone, 8,471 feet. Second, Drexel, 7,195 feet.

Aero Club of America Distance Contest: Won by Moisant, 135 kilometers in 1 hour 43 minutes 23 seconds.

Special Altitude Prize: Won by Johnstone, 9,714 feet. World's record.

Gordon Bennett Cup: Won by Grahame-White (Great Britain), 100 kilometers in 1 hour 1 minute 4.74 seconds. Second, John B. Moisant (America), 1 hour 57 minutes 44.8 seconds. At the end of his nineteenth lap, with but one lap to go, Alfred Leblanc (France), was leading Grahame-White by more than 5 minutes, but was put out of the race by an accident. He made one lap of 5 kilometers in 2 minutes 44 4-5 seconds, which works out 67.868 miles per hour, the world's record for aeroplane speed.

Nov. 17th. Ralph Johnstone was killed by a fall of 500 feet at Denver. This is the second death that has occured in America as a result of an aeroplane accident.

Dec. 26th. Hoxsey established world's altitude record by ascending 11,474 feet at Los Angeles.

Dec. 30th. Hoxsey established American duration record by flight of 3 hours 17 minutes at Los Angeles.

Dec. 31st. Moisant killed by fall of 50 feet at New Orleans.

Dec. 31st. Hoxsey killed by fall of 500 feet at Los Angeles.

EUROPEAN AVIATION RECORD

Jan. 31st. Van den Born flew at Chalons with a passenger for 1 hour 48 minutes 50 seconds, covering 151 kilometers and establishing a world's record. He used a Farman biplane.

Jan. 31st. Effimoff flew at Chalons with a passenger for 1 hour 48 minutes 30 seconds, covering 158 kilometers. He used a Farman biplane.

Feb. 6th–13th. Meet at Heliopolis, near Cairo, resulted as follows:

Rougier (Voisin), was first in height contest, 255 meters; in the 5-kilometers speed contest Balsan (Blériot), was first in 4 minutes 1 second; in the 10-kilometers speed race, Le Blon (Blériot), first in 8 minutes 7 4-5 seconds; greatest distance, Metrot (Voisin), 85.5 kilometers; the prize for accumulated distance went to Rougier, 153.5 kilometers.

De Riemsdyk (Curtiss), was placed sixth for the accumulated distance with 29.5 kilometers, and eighth for greatest distance in a single flight of 24 kilometers.

Feb. 28th. George Chavez on his sixth flight was in the air 1 hour 47 minutes. He flew at Chalons in a Farman biplane.

Mar. 5th. Henry Farman flew at Rheims with two passengers for 1 hour 2 minutes 5 seconds, establishing a world's record.

Mar. 7th–Apr. 5th. Meet at Cannes resulted as follows:

Prize for Total Distance: 1, Christiaens (H. Farman), 5 hours 45½ minutes.

Prize for Duration without Stop: 1, Crochon (H. Farman), 1 hour 9 minutes 29 2-5 seconds.

Prize for Speed for 11 kilometers: 1, Edmond (Farman), 8 minutes 1 3-5 seconds.

Prize for Height: 1, Popoff (Wright), 815 feet.

Apr. 8th. Kinet flew at Mourmelons with a passenger for 2 hours 20 minutes, covering 164 kilometers (102 miles) and establishing a world's record.

Apr. 15th–24th. Meet at Nice resulted as follows:

Greatest Cumulative Distance: 1, Effimoff (Farman), 960.398 kilometers (596 miles); 2, Van den Born (Farman), 606.336 kilometers; 3, Chavez (Farman), 440.33; 4, Rolls (Wright), 421.718 kilometers; 5, Latham (Antoinette), 391.224 kilometers.

Longest Distance Without Stop: 1, Effimoff (Farman), in 1 hour 15 minutes 55 2-5 seconds, 97 kilometers; 2, Van den Born (Farman), in 1 hour 58 minutes 18 1-5 seconds, 87.5 kilometers; 3, Rawlinson (Farman), in 1 hour 37 seconds, 76 kilometers.

Speed for 5 Kilometers: Effimoff (Farman), 5 minutes 23 3-5 seconds.

Passenger Prize: Van den Born, in 1 hour 10 minutes 22 seconds, for 62.708 kilometers; Effimoff (both in Farmans), in 1 hour 18 minutes 51 4-5 seconds, for 58.5 kilometers.

Height: 1, Latham, 656 meters, followed by Chavez (Farman), 644; Rolls (Wright), 242; Metrot (Voisin), 231; and Olieslaegers (Blériot), 217 meters.

Apr. 20th. Sommer flew for 5 minutes with three passengers.

Apr. 23d. Dubonnet flew from Juvisy to Bagatelle, passing directly across Paris.

Apr. 27th. Paulhan flew from London to Manchester in two stages. London to Litchfield, 117 miles, 2 hours 39 minutes. Litchfield to Manchester, 68 miles, 1 hour 23 minutes.

May 15th. Kinet flew with a passenger for 2 hours 51 minutes.

May 21st. De Lesseps crossed the English Channel from Calais to Dover in 42 minutes, using a Blériot monoplane.

June 2d. Rolls crossed the English Channel from Dover to Sangatte and return in 90 minutes.

June 8th. Morane flew 93 kilometers cross-country in 72 minutes with a Blériot monoplane.

June 11th. Morane flew at Tours with a passenger for 1 hour 30 minutes, establishing a world's record for monoplanes.

July 4th–10th. Rheims meeting resulted as follows:

Of the 72 entered 46 competitors actually flew a total distance of 8,500 miles. $38,000 was distributed in prizes.

The longest distance flown by one make of machine, 2.601 kilometers, by the Antoinette.

The best total distance by one man was 1,693 kilometers in 19¼ hours, by Olieslaegers (Blériot).

Longest single flight, 392.75 kilometers, 5 hours 3 minutes 5 1-5 seconds, by Olieslaegers (244.04 miles).

The following new world's records were established:

Distance and Duration: 392.75 kilometers (244.04 miles), in 5 hours 3 minutes 5 1-5 seconds, by Olieslaegers (Blériot).

Speed Over Certain Distances: 5 kilometers, Morane (Blériot), 3 minutes 14 3-5 seconds; 10 kilometers, Morane, 5 minutes 42 2-5 seconds; 20 kilometers, Morane, 12 minutes 45 3-5 seconds; 30 kilometers, Olieslaegers (Blériot), 23 minutes 31 seconds; 40 kilometers, Olieslaegers, 30 minutes 11 seconds; 50 kilometers, Leblanc (Blériot), 37 minutes 50 3-5 seconds; 60 kilometers, Leblanc, 45 minutes 28 3-5 seconds; 70 kilometers, Leblanc, 53 minutes 32 4-5 seconds; 80 kilometers, Leblanc, 1 hour 2 minutes 22 3-5 seconds; 90 kilometers, Leblanc, 1 hour 11 minutes 15 2-5 seconds; 100 kilometers, Leblanc, 1 hour 16 minutes 11 seconds; 150 kilometers, Olieslaegers, 2 hours 3 minutes 49 1-5 seconds; 200 kilometers, Latham (Antoinette), 2 hours 46 minutes 2 seconds; 250 kilometers, Olieslaegers, 3 hours 34 minutes 53 4-5 seconds.

Speed with One Passenger: 10 kilometers, Ladougne (Goupy), 8 minutes 14 2-5 seconds; Aubrun (Blériot), 20 kilometers, 19 minutes 39 1-5 seconds; 30 kilometers, 29 minutes 10 seconds; 40 kilometers, 38 minutes 51 seconds; 50 kilometers, 48 minutes 28 seconds; 60 kilometers, 57 minutes 58 2-5 seconds; 70 kilometers, 1 hour 7 minutes 31 1-5 seconds; 80 kilometers, 1 hour 16 minutes 59 2-5 seconds; 90 kilometers, 1 hour 26 minutes 33 seconds; 100 kilometers, 1 hour 36 minutes 6 seconds.

Distance with One Passenger: Aubrun 137.125 kilometers.

Duration with One Passenger: Aubrun, 2 hours 9 minutes 7 4-5 seconds.

Speed with Two Passengers: Mamet (Blériot), 10 kilometers, 10 minutes 18 4-5 seconds; 20 kilometers, 21 minutes 14 seconds; 30 kilometers, 31 minutes 53 1-5 seconds; 40 kilometers, 42 minutes 32 2-5 seconds; 50 kilometers, 52 minutes 36 1-5 seconds; 60 kilometers, 1 hour 3 minutes 20 3-5 seconds; 70 kilometers, 1 hour 14 minutes 36 3-5 seconds; 80 kilometers, 1 hour 23 minutes 33 seconds; 90 kilometers, 1 hour 36 minutes 4 seconds.

Greatest Distance with Two Passengers: Mamet, 92.75 kilometers.

Average Speed per hour: 106.508 kilometers (66.18 miles), Morane (Blériot), with 100 horse-power, 14-cylinder Gnome engine.

Aug. 1st. Farman flew at Mourmelon with three passengers for 1 hour 4 minutes.

Aug. 11th. Drexel ascended at Lanark to an altitude of 6,750 feet, establishing a world's record.

Aug. 15th. Grahame-White established a world's record by starting in his Farman biplane in 20 feet 9 inches.

Aug. 17th. Leblanc came in winner of 485-mile cross-country race, flown in six stages.

Aug. 29th. Morane ascended at Havre to an altitude of 7,054 feet, establishing a world's record.

Sept. 3d. Morane ascended at Beauville to an altitude of 8,468 feet, establishing a world's record.

Sept. 6th. Moisant arrived at London, having flown with a passenger from Paris. He started Aug. 16th.

Sept. 7th. Weyman flew 261 miles cross-country in 5 hours 1 minute.

Sept. 8th. Chavez ascended at Issy to an altitude of 8,792 feet, establishing a world's record.

Sept. 18th. Records were established at the Bordeaux meet, as follows:

60 kilometers, 39 minutes 32 2-5 seconds, by Morane.

70 kilometers, 46 minutes 19 1-5 seconds, by Morane.

80 kilometers, 53 minutes 5 seconds, by Morane.

90 kilometers, 59 minutes 52 2-5 seconds, by Morane.

100 kilometers 1 hour 6 minutes 39 seconds, by Morane.

Record for 1 hour, 90 kilometers, by Morane.

Sept. 27th. Chavez landed at Domo d'Ossolo, Italy, having flown over the Simplon Pass from Brig, Switz. The collapse of a wing as he was landing resulted in his death.

Oct. 1st. Wynmalen ascended in a Farman biplane at Mourmelon to an altitude of 9,186 feet, establishing a world's record.

Oct. 8th. Tabuteau flew at Buc, Fr., for 6 hours 1 minute 35 seconds, covering 289 miles, and breaking all records for duration and distance.

Dec. 9th. Legagneux established world's altitude record by ascent of 10,499 feet in Blériot monoplane.

Dec. 18th. Sopworth flew from Eastchurch, Eng., to Beaumont, Belg., 174 miles, in 3.5 hours.

Dec. 18th. Farman established world's duration record by flight of 8 hours 23 minutes.

Dec. 21. Legagneux flew 320.62 miles in 6 hours 1 minute.

Dec. 22d. Cecil Grace descended in North Sea after cross-channel flight, and was lost.

Dec. 22d. Lieut. Camerman with passenger flew 147 miles in 4 hours 2 minutes.

Dec. 30th. Tabuteau established world's record for distance by flight of 362.66 miles in 7 hours 45 minutes.

Necrology.—Up to the end of 1910 accidents to power-driven aeroplanes have been responsible for the death of thirty-two aviators, and from a study of the conditions Baudry de Saunier draws the conclusion that almost without exception they were preventable, being due to poor material and construction rather than to mishandling.

Many accidents have been due to the fitting of high-power motors to aeroplane structures that were of insufficient strength, and to the use of materials unsuited to the purpose. The importance of strength and material are now recognized, and probably future accidents will be largely due to careless handling, or in connection with trials of new types. Deaths from aeroplane accidents are as follows:

1908

SELFRIDGE, Lieut. Thomas E., U.S.A., killed by fall on Sept. 17th with Orville Wright at Fort Myer, near Washington, D. C.

1909

LEFEBVRE, E., killed by fall on Sept. 7th in a Wright biplane at Juvisey-sur-Orge, Fr.

ROSSI, Ena, killed by fall on Sept. 22d in a machine of his own construction, near Rome.

FERBER, Capt. Louis F., killed by a fall on Sept. 22d at Boulogne, in a Voisin biplane.

FERNANDEZ, Antonio, killed by a fall on Dec. 6th at Nice in biplane of Wright type.

1910

DELAGRANGE, Leon, killed by a fall on Jan. 24th in a Blériot monoplane at Bordeaux.

LE BLON, Hubert, killed by a fall on Apr. 2d at San Sebastian, Spain, in a Blériot monoplane.

MICHELIN, Hauvette, killed by collision on May 13th at Lyons, in an Antoinette monoplane.

ZOSELY, Aindan de, killed by a fall in a machine of his own construction, at Budapest, June 2d.

ROBL, Thaddeus, killed by a fall on June 18th at Stettin in Farman biplane.

WACHTER, Carl, killed by a fall on July 3d, in an Antoinette monoplane at Rheims.

ROLLS, Hon. Charles Stewart, killed by a fall on July 12th at Bournemouth, Eng., in a British-built Wright biplane.

KINET, Nicholas, killed by 650-foot fall, Aug. 3d, in Belgium, in a H. Farman biplane.

VIVALDI, Lieut. Pasqua, killed by 1,000-foot fall, Aug. 20th, in a Farman biplane, near Rome.

VAN MAASDYK, Clement, killed by fall of 150 feet on Aug. 27th, in Holland, in Sommer biplane.

POILLOT, Edmond, back broken by a fall on Sept. 25th, at Chartres, Fr., in Savary machine.

CHAVEZ, George, died Sept. 27th at Domo d'Ossola from injuries received in a fall with his Blériot monoplane after flying from Brigue, Switz., over the Alps.

PLOCHMANN, ——, killed by 150-foot fall in biplane on Sept. 29th at Muelhausen.

MADIOT, Capt., killed by fall at Douai, Fr., Oct. 23d.

MENTE, lieutenant in German army, killed by fall Oct. 25th from Wright biplane at Magdeburg.

BLANCHARD, Fernand, killed by fall Oct. 26th in monoplane at Issy-les-Moulineaux, near Paris.

HAAS, ——, killed by fall in biplane, Oct. 1st, at Metz.

MACIEVITCH, Capt., of the Russian army, killed by fall of 1,640 feet on Oct. 7th, at St. Petersburg, in a Voisin biplane.

SAGLIETTI, Lieut., killed by fall in military biplane Oct. 27th, at Rome.

JOHNSTONE, Ralph, killed by fall of 500 feet on Nov. 17th, at Denver, in a Wright biplane.

CAMMARATA, Lieut., killed by fall in Farman biplane, near Rome, Dec. 3d. Passenger also killed.

GRACE, Cecil, drowned in North Sea while flying in Wright biplane, Dec. 22d.

PICCOLO, D., killed in Antoinette monoplane at San Paulo, Brazil, Dec. 25th.

LAFFONT, Alexandre, killed by fall of 200 feet in France, Dec. 28th. Passenger also killed.

CAUMONT, Lieut., killed by fall of 60 feet from monoplane at Versailles, Fr.

MOISANT, John B., killed by fall of 50 feet from Blériot monoplane at New Orleans, Dec. 31st.

HOXSEY, Archibald, killed by fall of 500 feet in Wright biplane at Los Angeles, Dec. 31st.

Aeroplane Details.—The aeroplanes described below are the best-known 1910 types. The first dimension given is the length over all in feet, followed by the breadth over all in feet. The abbreviation, S.S., is the approximate supporting surface in square feet. In giving wing dimensions, the spread is mentioned first, then the chord—the straight-line distance from front to rear edge. The monoplanes (and the Wright biplanes) secure lateral stability by warping or deforming the wings. The Curtiss and other biplanes make use of ailerons—small surfaces trailing from or placed between the main supporting surfaces.

MONOPLANES

Blériot XI bis: 23 by 28; S.S., 160;

wings, 13½ ft. by 6½ ft.; 7-cyl. Gnome engine, driving a 7 ft. 6 in. propeller at 1,200 R.P.M.

Blériot two-seater: 22 by 32; S.S., 210; wings, 15 ft. by 7 ft.; 7-cyl. Gnome engine driving a 7½ ft. propeller at 1,200 R.P.M.

Blériot Racer: 23 by 26; S.S., 150; wings, 12½ ft. by 6½ ft.; 14-cyl. Gnome engine driving 7 ft. 11 in. propeller at 1,300 R.P.M.

Santos Dumont "Demoiselle": 20 by 18: S.S., 100; wings, 9 by 6½; 2-cyl. Clement-Bayard motor driving 6½ ft. propeller at 1,100 R.P.M.

Antoinette: 42 by 46; S.S., 377; wings, 22 by 8½ to 6½; Antoinette 8-cyl. motor driving 7 ft. 11 in. propeller at 1,200 R.P.M.

Antoinette Racer: 42 by 40; wings, 19 by 8½ to 7; Antoinette 16-cyl. motor driving 7 ft. 11 in. propeller at 1,200 R.P.M.

BIPLANES

Curtiss Special (Willard's): 34 by 32; S.S., 300; wings, 32 by 5; Curtiss 8-cyl. motor driving 7 ft. propeller at 1,200 R.P.M.

Curtiss: 28 by 26; S.S., 263; wings, 26 by 4½; Curtiss 8-cyl. motor driving 7½ ft. propeller at 1,250 R.P.M.

Hamiltonian: 30 by 31; S.S., 310; wings, 31 by 5; Christie 8-cyl. motor driving 9 ft. propeller at 1,100 R.P.M.

Hamiltonian: 28 by 26; S.S., 263; wings, 26 by 4½; Hall-Scott 8-cyl. motor driving 8 ft. propeller at 1,100 R.P.M.

Farman: 38 by 33; S.S., 429; wings, 33 by 6½; 7-cyl. Gnome motor driving 8 ft. propeller at 1,200 R.P.M.

Wright: 30 by 39; S.S., 485; wings, 39 by 6 ft. 2 in.; Wright 4-cyl. motor driving two 8½ ft. propellers at 450 R.P.M.

Wright High Flier: 19½ by 26; S.S., 180; wings, 26 by 3½; Wright 4-cyl. motor driving two 8½ ft. propellers at 450 R.P.M.

Wright Roadster: 19½ by 22; S.S., 150; wings, 22 by 3½; Wright 4-cyl. motor driving two 8½ ft. propellers at 450 R.P.M.

Wright Racer: 19½ by 21½; S.S., 146; wings, 21½ by 3½; Wright 8-cyl. motor driving two 8½ ft. propellers at 500 R.P.M.

Herring-Burgess: 33 1-3 by 28¾; S.S., 286; wings, 28¾ by 5½; Hendee 8-cyl. motor driving 8 ft. propeller at 1,400 R.P.M.

Engines.—The success of the aeroplane during 1910 has been due largely to improvements in engines. The cross-country flights, and particularly the flights over cities, that were made during 1910 are tributes to the part played by the engine builders in the development of aviation, for they could not have been accomplished without engines of unquestioned reliability. Light weight is considered to be essential in an aeroplane engine, and to secure this without loss of efficiency, and with the retention of the necessary strength, has required the production of designs quite different from standard types. Of these special engines the Gnome is perhaps the most interesting as being a successful example of a little-known type, and also because of what it has accomplished. It was first seen to advantage in this country in Paulhan's Los Angeles flights, when he established records for altitude and for cross-country flights with and without a passenger. It was used by Grahame-White in his flights around the Boston lighthouse, around the Statue of Liberty, and in the winning of the Gordon Bennett aviation trophy, and also by Moisant, Drexel, LeBlanc, DeLesseps, Aubrun, Radley, and other Bleriot and Farman operators at the Belmont Park and subsequent meets. The peculiarity of the Gnome engine lies in the fact that its seven cylinders project radially from the cylindrical crank case, and revolve with it as a unit around the stationary crank shaft. The cylinders are formed from billets of steel, and, as they are provided with flanges, cooling is accomplished by their rapid passage through the air. The mixture enters the cylinders through the hollow crank shaft, and ignition is by a single-point Bosch magneto and a distributor built on the crank case. It is of the four-cycle type, with cylinders of 4⅜-inch bore by 4¾-inch stroke, and develops 50 horse power; it is also built with fourteen cylinders to develop 100 horse power.

Very successful results have been attained with eight-cylinder engines, in which two sets of four cylinders project from the crank case at an angle of ninety degrees, and of which the crank shaft is of the four-throw type. Curtiss builds an engine of this description, and used one in his Albany-New York flight; its duplicate carried Hamilton from New York to Philadelphia and return. The Curtiss engine is also used by

Ely, Willard, McCurdy, Mars, and Baldwin. Christie built an engine of this type for Hamilton, and it is undoubtedly the most powerful that has yet been installed in an aeroplane. Its cylinders measure 4⅜-inch bore by 7-inch stroke, and it develops 110 horse power. Other successful eight-cylinder "V" engines are the Antoinette, Hall-Scott, Rinek, and Hendee, and this was also the type of engine built by the Wrights for the "Baby" Wright aeroplane intended for the Gordon Bennett race.

The two-cycle engine gave sufficient promise of fulfilling the requirements of aviation to induce several builders to develop it, and its accomplishments during 1910 indicate a greater success during the coming years. As an example of the possibilities, the 5-inch-by-5-inch six-cylinder Emerson engine develops over 100 horse power, and weighs less than 300 pounds, fully equipped. Other successful two-cycle motors are the Elbridge, Fox, and Roberts.

The question of the proper carburetion system for aviation engines is still an open one, and will require a further solution before complete success is reached. The difficulty encountered is due to the differences in atmospheric conditions at the surface of the earth and at varying altitudes. In automobile work this difference is taken care of by an air control, but an arrangement of this character is

DETAILS OF AVIATION ENGINES

Name.	Number of Cylinders.	Bore (inches).	Stroke (inches).	Horse Power.	Weight (pounds).
	Vertical Type.				
Clement	4	3.9	4.75	24.5	213
Darracq	4	6.7	5.7	59.	550
Green	4	5.5	5.75	48.	236
Wright	4	4.25	4.37	29.	176
Curtiss	4	3.5	3.75	20.	85
Elbridge 2-cycle	4	4.6	4.5	40.	178
Elbridge 2-cycle	6	4.6	4.5	60.	225
Emerson 2-cycle	6	5.	5.	100.	285
	Diagonal Type.				
Antoinette	8	4.35	4.35	60.	209
Antoinette	16	4.35	4.35	120.	264
Anzani	4	5.3	5.9	45.	308
Rinek	8	4.5	4.5	65.	300
E. N. V.	8	4.15	4.35	55.	286
Hendee	8	4.	4.5	52.	260
Curtiss	8	3.5	3.75	40.	150
Curtiss	8	4.	4.	52.	175
Christie	8	4.37	7.	76.	300
Renault	8	3.5	5.5	40.	550
Wolseley	8	3.75	5.	45.	300
	Horizontal Type.				
Darracq	2	5.1	4.7	20.	121
	Radial Type.				
Anzani	3	5.3	5.9	34.	231
R. E. P.	7	3.35	3.75	32.	150
	Rotary Type.				
Gnome	7	4.35	4.7	53.	165
Gnome	14	4.35	4.7	106.	220

not available at the present stage of aeroplane development. Wynmalen's altitude flight of 9,152 feet was achieved with a carbureter-equipped engine, and the ascent ended only with the freezing of the carbureter. When Johnstone broke this record at Belmont Park, he used a device that injected the gasoline into the inlet manifold, and this, which is characteristic of the Antoinette and Wright engines, is unaffected by any ordinary changes in temperature. It has the effect, however, of providing a less homogeneous mixture, and in consequence reduces the efficiency of the engine.

In practically all aviation engines, ignition is by high-tension Bosch magneto, with or without an integral distributor. The cooling of aeroplane engines could apparently best be accomplished by the direct contact of air with the heated surfaces. With the exception of the Gnome, however, air cooling has not proved a success, and in consequence cooling by water is practically universal, although it necessitates the fitting of a radiator. The table on the preceding page gives the salient points of the best-known engines, the horse-power rating for the four-cycle types being according to the formula—*bore times bore time number of cylinders divided by 2.5.* While this formula is in very general use, it should be borne in mind that its results are only approximate, and usually low.

The Wright Patents.—At the beginning of 1910 the Wright Brothers had obtained a temporary injunction against Curtiss, on the ground that he was infringing their patents, which covered the securing of lateral stability through the altering of the angle of the wing ends to change the angle of incidence, the tendency to turn due to the unequal resistance being counteracted by the simultaneous operation of the rudder. The construction of the Curtiss machine at that time did not involve the deformation of the surfaces, as was the case with the Wright, but required the tilting of inflexible surfaces located between the main supporting surfaces. In his answer, Curtiss made the claim that the use of these extra surfaces, or ailerons, did not swing the machine from the course, and that as the use of the rudder was not necessary to the maintenance of stability, he did not infringe the Wright patents. As proof of his claim he made a number of flights with his rudder lashed. The temporary injunction required the deposit of a $10,000 bond in order that he might continue business, and this was the situation until in June the court refused to make the injunction permanent. This decision is now under appeal.

Industrial Progress.—The interest in aeronautics that has developed has, of course, resulted in its being taken up by many people as a means of livelihood. During eight months of 1910 the records show the incorporation of 76 companies in all parts of the country to manufacture apparatus or accessories, or to conduct exhibitions. The total capitalization of these 76 companies is $3,686,000. The pages of the December issues of two of the aeronautic magazines disclose advertisements of manufacturers, divided as follows: complete aeroplanes, 18; balloons, 3; aviation motors, 14; accessories, 59.

DEVELOPMENT OF THE INTERNAL COMBUSTION ENGINE

Roger B. Whitman

While the internal combustion engine is not of recent origin, its development in the past few years has been remarkable, and it is to-day the most economical form of power producer, with the exception of the water wheel or turbine. Its present position is due to improvements in mechanical detail based on a more perfect understanding of the principles involved, and also to better methods of producing the combustible mixtures required. The characteristics of the engines and of the fuels employed are discussed under their appropriate headings. It may be noted, however, that engines of automobile and aviation types are treated elsewhere in this work.

Gasoline.—In respect to the number of engines operating on it, the fuel that is in most general use is gasoline, a derivative of petroleum. One reason for its popularity is the low temperature at which it vaporizes, and the ease with which a gaseous and combustible mixture may be developed from it. The percentage of the gasoline content of petroleum is very low, however (about 3%), and its manufacture results in the production of other materials of a less marketable character. In equalizing this condition, the refiners have increased the density, until in 1910 the average density reached 64° Baume. This is a drop of 1° per annum since 1900. State Oil Inspector Longshore, of Kansas, states:

> The consumption of gasoline during the month of April, 1910, has increased 46% over the same period of the previous year. The gasoline supply of the world is beginning to fall off slightly, in comparison to the increased demand, and unless new oil fields are discovered, or the distillation process is improved, the automobile trade will find itself face to face with the serious problem of a shortage of gasoline.

The use of the denser grades is noticed chiefly in the greater difficulty in the starting of an engine, and among the expedients for overcoming this are the warming of the carbureting apparatus, and the starting of the engine on a high grade of gasoline as a preliminary to operation on the denser oil.

Kerosene. — As kerosene and the light distillates cost considerably less than gasoline, a number of manufacturers have produced engines designed to operate on these fuels, and the results have been most satisfactory. The chief difference is in the compression, the kerosene engine operating at from 90 to 100 pounds, as against 65 to 75 for the gasoline engine. Kerosene engines are in use chiefly for stationary and marine work, and for farming purposes. Aside from the low fuel cost, their advantage is found in decreased fire risk, and in the consequent reduction in insurance. The development of engine design permitting the use of these heavier fuels is progressing rapidly.

Alcohol.—It was expected that the removal of the tax on denatured alcohol would result in the extensive use of this fuel for power purposes, but the restrictions placed on its manufacture have prevented the development hoped for. The intention of the law was to permit the farmer to make use of waste product by converting it into alcohol. The form in which the law was passed, however, requires him to perform certain operations in the presence of Federal inspectors, and to install an equipment that in cost is out of proportion to the value of the product. The amendment of the law along more rational lines would be highly beneficial, and result in economy not only in the utilization of waste product, but in the production of power. The European nations have made great progress in the use of alcohol for power purposes, and the prevention of a similar development in the United States is greatly to be regretted. The following conclusions are drawn from a bulletin on *Commercial Deductions from Comparisons of Gasoline and Alcohol Tests on Internal Combustion Engines*, issued by the U. S. Geological Survey; with an engine of suitable compression (about 180 lbs. per sq. in.) the consumption of alcohol in gallons per horse-power hour is practically the same as the consumption of gasoline in an engine of the same size and speed, but designed for the use of gasoline. The indications are that this possible 1 to 1 fuel consumption ratio by volume, for alcohol and gasoline engines, will hold true for any size or speed, if the cylinder dimensions and revolutions per minute of the two engines are the same. The low heating value of completely denatured alcohol will average 10,500 B.T.U. per lb., or 71,900 B.T.U. per gallon. With .71 or .73 gasoline, the low heating value will average 19,200 B.T.U. per lb., or 115,800 B.T.U. per gallon. When the fuels for which they are designed are used to equal advantage, the maximum available horse power of an alcohol engine having a compression pressure of 180 lbs. is about 30% greater than that of a gasoline engine having a compression pressure of 70 lbs., but of the same size in respect to cylinder diameter, stroke, and speed. The bulletin concludes with the words:

> Denatured alcohol will, however, probably not be used for power purposes to any great extent until its price

and the price of gasoline become equal, and the equality of gasoline and alcohol engines in respect to ability for service required and quantity of fuel consumed per brake horse power, which has been demonstrated to be possible, becomes more generally realized.

City Gas.—The early internal combustion engines were operated on city gas, but until recently no particular effort was made to urge the use of this fuel. The adoption of the electric motor has forced the gas companies to action, however, and during 1910 a great effort has been made to induce power users to install gas engines. While not as compact or convenient as an electric motor, a modern gas engine operating on city gas shows greater economy, and this is the chief factor in its adoption.

Blast Furnace Gas.—The first step in the utilization of waste gases from blast furnaces, coke ovens, etc., was to burn them under steam boilers, and this resulted in a marked economy. A further advance was the cleansing and treatment of these gases to render them suitable for use in internal combustion engines, and this was first undertaken in Germany. The Pennsylvania Steel Co., Steelton, Pa., and the Lackawanna Steel Co., Buffalo, N. Y., were the first to adopt the plan in the United States, and the results were such that when the city of Gary, Ill., was planned by the United States Steel Corporation, arrangements were made to depend on this power almost exclusively. This utilization of waste product has, of course, resulted in a great increase in economical production, and in the United States in 1910 this fuel is producing upward of 200,000 horse power. (See XX, *Manufactures.*)

Producer Gas.—The operation of a steam plant is notoriously wasteful, and it is only in exceptional cases that an efficiency of 15% is reached. The development of the gas producer is due to the desire to increase efficiency, and the apparatus of to-day is based on the Dowson producer, introduced in 1878. In the gas producer, carbon monoxide is obtained by the incomplete combustion of coal, charcoal, etc., and after cleansing and drying this is fed direct to the engine. The production of power by this method is therefore more direct than is the case in a steam plant, and the chief sources of loss are eliminated. Not the least advantage of the gas producer lies in its ability to operate successfully on fuels of so poor a quality that they are unavailable for use under a steam boiler. Fernald makes the following statement:

> The use of these fuels, which previously have been regarded as of little or no value, increases our fuel resources approximately (on a basis of present marketable grades) as follows:—(a) Low grade bituminous and peat, 60%. (b) Sub-bituminous lignite and peat, 60%. Or, roughly, total increase of 150% over our present supply of marketable grades of fuel.

The efficiency of a gas producer plant is roughly two and a half times that of a steam plant, and with coal at $5 per ton, electric current may be obtained at a cost of one cent per kilowatt-hour. The number of producer plants in the United States is increasing with great rapidity, their chief employment being in electric work. The system is applied to marine work, and it is estimated that over 75 vessels are so equipped.

Farm Engines.—One of the most striking advances during 1910 was the adoption of internal combustion engines for farm purposes. These are of such convenience and economy of operation that they are recognized as a farming necessity, and for pumping purposes they are rapidly displacing windmills. These engines are rarely of more than 12 horse power, of vertical as well as horizontal form, and are frequently mounted on trucks for use as portable power plants. Among their manifold uses are pumping, and the operation of feed choppers, churns, cream separators, portable sawmills, fodder hoists, etc. On the more prosperous farms they drive dynamos for light and power. Progressive farmers realize the benefits of surface and subsurface irrigation, and the gasoline or kerosene engine offers the cheapest form of power for the raising of the water. As an example of the possibilities, the case of a farmer of Lehigh Co., Pa., may be cited. Of a 24-acre potato field, he irrigated 14 acres, and found that the average yield of irrigated above the nonirrigated areas was 96 bushels per acre, or about 70%. The yield of his 14 irrigated acres was 3,290 bushels, valued at $1,974. On a basis of the yield of his nonirrigated area, the 24 acres, without irrigation, would have yielded 3,300 bushels, valued at $1,980. The actual yield of the entire acreage was 4,665 bushels, with a value of $2,799. The gross gain by irrigation was $819, and as the cost of operation, interest, and depreciation amounted to $200, the irrigation plant paid a net profit of $619. Many similar cases are on record.

Tractors.—The farm tractor driven by an internal combustion engine is displacing horses for plowing, harrowing, and harvesting, and this is purely on a basis of economy. A few examples may be given. In 1909, a North Dakota farmer paid $4 per acre for the breaking of his 57 acres by horse plows. In 1910, he contracted with the owners of a traction engine at the same rate, and the work was completed between 3 P.M. and the evening of the following day. The expense was $8 for gasoline, $2 for lubricating oil, and the time of the two operators. In Kansas, a 1,000-acre farm was plowed, rolled, and drilled for $606, as against an expense of $1,800 for the same work done by horses. The following figures summarize the records relative to the expense of plowing a 1,600-acre farm by horse and by tractor, and include operating as well as overhead costs:

Cost of plowing by horses	$5,559.41
Cost of plowing by tractors	1,740.31
Annual net saving	3,819.10

In connection with the industrial exposition held at Western Manitoba, July, 1910, a series of contests was held between various makes of gasoline, kerosene, and steam tractors to determine efficiency, costs, etc. The rules laid down made it possible to secure fairly accurate data, and the tests included the actual plowing of virgin prairie land, which at that time of year was hard baked and difficult to break. The abbreviated records of the winners in the various classes are as follows: Class A, 20 B.H.P. and under, won by 15 H.P. International Harvester Co. tractor, with a 2-furrow, 14-in. gang plow, breaking .72 acre per hour, with a fuel consumption of 3.73 gal. Class B, 21 to 30 B.H.P., won by 20 H.P. International Harvester Co. tractor, with a 4-furrow, 14-in. gang plow, breaking 1.35 acres per hour, with a fuel consumption of 2.19 gal. Class C, over 30 H.P., won by 30 H.P. "Gas Tractor," with a 7-furrow, 14-in. gang plow, breaking 1.83 acres per hour, with a fuel consumption of 2.20 gal.

Large Power Plants.—The power plant of the United States Steel Corporation at Gary, Ind., was set in operation in 1908, and has since been increased until it now consists of 33 engines of 3,000 H. P. each operating on blast furnace gas, and driving blowers and generators. The engines are double-acting 4-cycle horizontal twin tandem, 44-inch bore and 54-inch stroke, with an actual compression of 185 lbs., and operating at 83 to 84 revolutions per minute. The operation of this plant has been under close observation, and the results have been so satisfactory that similar apparatus has been installed in practically all of the smelting and refining works controlled by the steel corporation. A further order recently placed by them is for two blowing units, the engines being of a type similar to those at Gary, but with cylinders of 44-inch bore and 60-inch stroke, and rated at 5,000 H.P. A power plant installed at the factory of the Standard Oilcloth Co., Peekskill, N. Y., is typical of 1910 practice, and may well be described. The fuel is developed from bituminous coal, and operates three gas engines direct connected to dynamos. The two producers are of the Loomis-Pettibone down-draught single-generator type, 7 feet in diameter and 12 feet 6 inches high, and rated at 250 horsepower each. After leaving the producer, the gas passes through a preheater, which not only heats the air passing to the producer, but produces the steam admitted with the air to the fuel bed. From the preheater the gas goes to the scrubbers, which are supplied with water through several spray nozzles, and a large proportion of the dust contained in the gas is thrown down by the passage through the finely divided spray, without the aid of coke or other distributing substance. From the scrubbers the gas passes to centrifugal washers and exhausters, consisting of turbine blowers driven at 3,600 revolutions per minute by 20 horsepower induction motors. The blowers are equipped with atomizing spray nozzles, and this process completes the cleaning of the gas. The dust content of the gas as it passes to the engines is considerably below .02 grain per cubic foot. The producer arrangement is such that either producer may be served by either exhauster, or both producers and both exhausters may be operated simultaneously. The exhausters discharge into a 12-inch main, leading to a gas-holder of 3,000 cubic feet capacity. The regulating function of this part is very important, as the three engines drive direct-connected alternators in parallel; with gas supplied to each engine at constant pressure, parallel operation is accomplished because one engine cannot rob another of gas. The gas has a heat value of 110 to 120 B.T.U., the hydrogen percentage being low because of the small proportion of steam delivered to the producers. The engine equipment consists of three double-acting tandem units of 160 horsepower each, the cylinders being 15 inches in diameter by 16-inch stroke. The compression is 180 pounds, and the speed 225 revolutions per minute. Each engine is direct connected to a 100 kilovolt-ampere alternator, and belted to an exciter. A 20 horsepower single-acting auxiliary engine operates a compressor, as well as a 1-kilowatt 125 volt direct-current generator for the supply of ignition current.

Other sources of current for ignition purposes are a 120-volt storage battery and the exciter busbars. The engines are normally started on compressed gas delivered to a tank by the compressor at 125 pounds pressure. From the cylinder jackets the warm water passes to the piston rods by telescopic joints, and flows through the pistons. The number of plants similar to the one described is increasing rapidly.

MARINE ARCHITECTURE AND ENGINEERING

Daniel H. Cox

Progress of the Year.—During the past year there was not as much activity as usual in the United States or abroad in the building and engining of vessels, yet in a way more than usual progress was made in several directions. Especially is this true of the improvement in design, and familiarity with the use of turbine engines of various makes, with the attendant effect upon the design of vessels in which they are installed, and in vessels equipped with internal-combustion engines of various types. Particular attention has of late been given to the perfection of appliances of various sorts calculated to increase the safety of vessels. Under this head may be included the perfection of automatic arrangements for closing water-tight doors, wireless telegraphy, and submarine signal apparatus, all of which appliances have actually demonstrated their usefulness recently on vessels so equipped, and their installation has undoubtedly resulted in saving many lives.

Naval Vessels.—The universal tendency in the design of war vessels in all countries is toward increased speed, and this is largely responsible for the much larger dimensions employed, owing to the relatively low power required to secure a given speed in long vessels, as compared with shorter ones. With the increased dimensions obtaining, vessels capable of a sustained high speed at sea with comparative comfort and steadiness as gun platforms have been produced, having considerably heavier armor and armament as well as a greater radius of steaming. This marked increase in size and power has consigned to the second line of defense many battleships built but a few years ago, which at the time of their launching were considered to be practically impregnable. An interesting illustration of this is the comparison of the typical recently built battleships of the English navy, and those now building in that and other navies.

Class.	Year Completion.	Length.	Displacement.	Speed.	Main Battery.
King Edward VII	1905	425	16,350	19	4–12 in.
Dreadnought	1906	490	17,900	12.8	10–12 in.
Conqueror	building	545	22,500	21	doubtful.
United States	"	554	26,000	20.5	12–12 in.
Germany	"	490	22,000	20	"
Japan	"	480	20,800	20.5	"
Russia	"	560	23,000	23	"
Italy	"	490	21,500	23	"
Argentina	"	575	28,000	22½	"

When it is remembered that a few years ago a displacement of 15,000 tons and a speed of 18 knots were as large as then considered practicable or advisable, the immense increase in power and size of the battleships now under construction becomes apparent. So far as main armament is concerned, the table shows that in vessels now building there is practically a unanimous verdict, a state of affairs never existing before. In England the battleships just authorized will probably have 13.5-inch guns, and those just authorized in the United States are to have 14-inch guns. With the increase in size and speed of battleships has come an increase in size and power of armored cruisers, which now have become so heavily armed and armored as to be called cruiser battleships. The latest vessels of this type now building in Great Britain are 660 feet in length, 26,000 tons displacement, have a speed of 28 knots, and carry 8 feet 12 inch guns, thus being most formidable vessels.

In the United States, judging from the absence of appropriations for vessels of large size except regular battleships, it would appear that the necessity for armored cruisers is not thought to be great, and it may be considered that, by their increased speed, the present battleships have taken upon themselves all the duties formerly assigned to the armored cruisers. In practically all modern naval construction, except special types having relatively low power, turbines are employed as propelling agents, water-tube boilers for generating steam, and in many instances the boilers are fired by oil fuel.

It may be of interest to note the increase in cost of battleships now being built in comparison with those built a few years ago. The present type cost approximately $11,000,000 each, while the *Oregon* class cost $3,250,000 apiece only; these figures being exclusive of the cost of armor and armament.

The award to an American shipyard, after keen competition among the shipbuilders of all countries, of the contract for the two enormous new battleships for Argentina is naturally a source of profound gratification to all interested in the development of the shipbuilding industry in the United States.

Yacht Building.—During the past year the yacht-building industry, except in vessels having gasoline engines, has been by no means active. In addition to the natural effect of a none too prosperous business outlook, this can be accounted for in two ways. The tax on foreign-built American-owned yachts has deterred many Americans from building steam yachts in Great Britain, and the present building prices of similar vessels in this country is so comparatively large that prospective owners have as a rule decided to do nothing for the present. The successful use of internal-combustion engines with gasoline fuel has led to the adoption of this mode of propulsion in successively larger vessels, until they have encroached upon the steam-yacht field. Further advance in this direction has been checked by the natural disinclination for carrying the enormous quantities of this expensive and explosive fuel, and by the hope that some of the many types of heavy oil internal-combustion engines, or of the gas-producer installations, will solve the problem of supplying safe and economical large marine power plants other than steam engines.

The building of motor-driven boats, both for pleasure and commercial purposes, has been remarkably active, and there is now an immense fleet of vessels of this class. Great interest has been taken in high-power racing motor craft, which have contested for international as well as local trophies. Special ocean races have been held, and cruising vessels of various types and powers running as large as steel hulls 140 feet in length with 600 horse power, and luxurious cruising accommodations, have been built. Among the sailing craft there has been but little activity outside the numerous small classes, with the notable exception of the racing schooner *Westward,* which made such an enviable record in foreign waters.

Mercantile Vessels.—Both in the United States and abroad the commercial tonnage contracted for or completed during the past twelve months has been below the average, and more particularly has the actual number of new vessels been less than in recent years. The transatlantic fleet, however, has attracted much attention by the immense size of the new vessels contracted for in this service by certain lines. The popularity of the largest and fastest vessels of this type now in operation—the turbine Cunarders, *Mauretania* and *Lusitania*—has resulted in the Hamburg-American line undertaking the construction of a steamer 90 feet longer than these vessels, also propelled by turbines. The White Star line has already launched the *Olympic* of still greater length, having a combination of reciprocating engines and turbines. Announcement is now made that the Cunard line has responded by ordering a turbine vessel larger than the *Olympic.* A brief summary of the principal characteristics of these notable vessels follows:

	Length.	Beam.	Displacement Tons.	Knots Speed.
Mauretania and Lusitania	790	88	32,500	25½
New Hamburg-American S.S.	880	96	45,000	22
New White Star S.S.	882	92	45.000	22
New Cunarder	885	95	50,000	23

When it is remembered how recently the *Mauretania* and *Lusitania* were considered phenomenal in point of size and speed, a consideration of the tremendous increase in proportions of the vessels now under way leads to an interesting speculation as to where the matter is to end. Two factors, however, tend to limit this increase in size—the docking facilities, and available draft of water. Were it not for these restraining factors, there would practically be no definite limit that could be imposed, as the problem of securing high speed is relatively simplified by increasing the length of vessels; and, moreover, both passengers and freight can be carried at any given speed more economically, with more comfort and more safety, in larger vessels. Under existing conditions, however, it seems doubtful that any material increase is to be expected in the near future. The universal use of turbines in these transatlantic giants proves beyond doubt the success of their application to this type of vessel.

A novel development in vessel construction is the contract lately placed by the Hamburg-American line for two cargo vessels, approximately 400 feet in length, which are to be propelled by internal combustion engines, using heavy oil as fuel, and having about 3,000 horse power in each ship. These vessels mark a departure.

Engineering.—No question has received more attention in the mechanical world of late than the types of engines used for vessel propulsion. The development of the reciprocating steam engine has reached a point where no radical change or improvement seems probable, and interest has centered chiefly in the investigation of turbine engines, and of combinations of reciprocating engines and turbines, and also engines of the internal combustion type, using heavy oils, of which the gasoline engine was the forerunner, as well as the application of gas producer to marine propulsion.

The practically universal adoption of the turbine engine for naval vessels of high power by all countries, and for the largest and speediest transatlantic liners, after an exhaustive study of the merits and demerits of this engine as compared with the reciprocating type, is proof that in special cases of this sort the turbine has decided advantages. Its adoption as a propelling agent for all steam vessels is, however, not much nearer than it was twelve months ago. Two main difficulties are charged to the turbines, namely, loss of economy at low powers, and loss of efficiency, particularly in heavy seas, with the small diameter of propellers resulting from the high rate of revolutions. The propeller question will probably not be successfully solved without the introduction of a speed-reduction gearing between the turbine and propeller.

In this country elaborate experimental work is being carried on in this direction with wheel gearing, while hydraulic and electric methods also are being investigated. In England a freighter fitted with speed-reduction gear is said to be in successful operation.

The problem of increasing the range of economical operation has naturally received special attention; various arrangements of turbines of different stages on the several shafts and alterations in piping methods have been tried; the installation of a special cruising turbine with special reference to low-powered cruising has been tried, but seems to be condemned on account of its complexity and the possible results on the machinery when so operated. The greatest advance in economy is probably due to the fact that the various makes of turbines are more and more nearly approaching each other in certain features, particularly in the partial admission of steam. Combinations of reciprocating engines and turbines, such as are to be installed in the *Olympic*, having in mind the greater relative economy of the first type in the higher, and of the second type in the lower stages of expansion, have been carefully investigated.

In boiler construction may be noted the increased leaning toward boilers of the water-tube type, even in the largest vessels, whenever quick raising of steam, and economy of weight and space become of considerable importance. For all general purposes the Scotch boiler retains its popularity as a steam producer. Various mechanical stokers as well as so-called smokeless combustion systems of firing, have been tried with more or less success; progress has certainly been made in this direction.

The use of oil in place of coal as fuel has been largely increased, and is practically universal in extremely high-powered vessels of torpedo-boat and destroyer type. The only real disadvantage of this system of firing, outside of the added risk of fire and possible present difficulty of finding fuel stations when required, is the difficulty of avoiding the production of heavy black smoke when getting up steam. When under way with blowers running, no smoke at all is seen; and its presence at other times is probably a fault the remedy for which is not far away.

Great progress has been made in the design and manufacture of internal explosion engines using heavy oil as fuel, this being the logical development of the gasoline engine of larger sizes, the latter having been found a constant source of trouble when even as much as 50 horse power per cylinder is desired. With the heavy oil engine no such difficulty is experienced, and six-cylinder engines of 1,500 horse power are being installed in German cargo carriers today.

MACHINE TOOLS AND DESIGN

William Lodge

Due to the introduction of high-speed steel, there have been more changes in machine-tool design in the past few years than in the preceding twenty. The first result was to greatly increase the horse-power delivered to the machine. A comparison of the power allowed for machine tools before and after the introduction of high-speed steel will give some idea of the saving in cutting time effected by present designs. To-day we find standard 24-inch engine lathes capable of delivering 20 horse-power to the cutting tool, where formerly 5 horse-power was ample. A modern 4-foot radial drilling machine will drive a 2-inch drill at 12 inches per minute through cast iron, which is over three times the output of older machines of the same size. A great increase in the weights of all parts of the machines has, of course, been necessary to enable them to stand up to the deeper cuts and higher speeds which the greater power is capable of pulling.

The increased speeds and pressures resulting from the heavy rapid cuts require much larger bearing surfaces and more positive means for oiling them. In some instances, spindles and bearings are nearly doubled in size. Some journals are made ring-oiling, others are oiled by sight feed oil cups, and others are provided with oil tubing and force pump to give lubrication under pressure.

Cast-iron gears are being replaced by steel in speed box drives and in charge gears for feed mechanisms. Accurately cut gears are becoming more and more essential both to reduce the noise and increase the durability. Steel gears are frequently hardened, and high speed pinions heat treated and made with extra special care.

Speed Changes.—The step cone, formerly almost always the device for affording changes of speeds, is rapidly becoming obsolete except on light machinery. Changes for both speeds and feeds are now usually secured through gearing. With the advent of high-speed steel there was a rush to all geared drives. There is now a strong tendency in the other direction. Well-known makes of lathes, radial drilling machines, drill presses, and milling machines have gearing for obtaining the speed changes, but drive by belt direct to the spindle to give a smoother finish on the work and relieve the work of the vibration and marks of the gearing.

Much attention is now being given to facilitating the quickness of operation by locating all levers so as to be convenient to the operator, by providing rapid power traverse for heavy carriages, and by eliminating belt shifting.

There is also a tendency toward a design which will not only absorb, but largely prevent vibration of work and machine. More rigid supports are provided for the cutting tools. Carriages are made much heavier, with wider and larger slides. Additional bearing surfaces provide extra supports in line with the greatest stresses, to prevent springing of any parts of the machine under severe service.

Multiple cutting tools are being utilized more and more. Planers frequently have four tools cutting at one time on different parts of a casting. Front and back tools are now used on the engine lathe for many pieces which formerly were turned much less efficiently with a single tool. An automatic screw machine has four spindles, so that operations are carried on simultaneously on four different pieces.

Individual Motors.—Drive by individual motor has been very generally adopted on the more powerful machine tools. This is more convenient and more efficient, because the machine can be quickly started and stopped independently of others, and because transmission losses of idle line shafts are eliminated. In some instances—small grinding and drilling machines for example — the motor forms an integral part of the machine, with the armature directly upon the driving spindle. This ideal construction is not possible for most machine tools because of limitations of the motor itself and the difficulty of keeping it in balance; the next best thing is to mount the motor on a low base beside the machine, with the armature shaft direct connected to the driving gears.

XXX. RELIGION AND RELIGIOUS ORGANIZATIONS

H. K. CARROLL

THE WORLD MISSIONARY CONFERENCE

Interdenominational Mission Organization. — Recent years have been marked by a great missionary impulse among the Evangelical Christian bodies of the world, particularly those of the United States and Canada. All of the latter, excepting only a few very small denominations, have missions in various foreign countries, which they conduct independently, or in some instances through kindred organizations.

Gradually there has been growing among foreign missionaries and foreign missionary societies a deeper fraternal feeling leading to comity between missions in the same territory; also to coöperation in educational, publication, medical, and other lines of work, and also to the organic union of certain missions into general native churches.

Interdenominational coöperation at home has also been a feature of foreign missionary activity. The boards and societies have an annual conference, meeting in Jan. and considering questions of common interest in the administration of missions. This conference maintains a committee of reference and counsel which acts for all the boards *ad interim* on questions of common concern, including those arising with governments. There is also an interdenominational organization, known as the Student Volunteer Movement, which works among college students and other young people with the purpose of leading them to volunteer to go out as missionaries, under the auspices of their respective denominational boards when they are ready for service. Another similar organization, called the Young People's Missionary Movement, endeavors to promote the study of the theory, history, and administration of missions and the character of the countries and of the peoples among whom missions are carried on. Text books are prepared and published for this purpose, and conferences are held for the training of those who are to lead study classes.

Laymen's Missionary Movement.— In addition to these influential interdenominational organizations is the Laymen's Missionary Movement, both denominational and interdenominational. Its object is to promote more particularly the interest of men in the missionary enterprise, in order that larger and more systematic contributions may be made through the denominational missionary treasuries, and it insists that all Christians are under obligation to support the cause more adequately so that the world may be evangelized in the present generation. Last winter and spring the interdenominational movement held a campaign in seventy-five or more of the leading cities of the country, presenting the opportunities for missionary expansion and urging the men of the churches to increase their missionary offerings. The result was pledged increases by representatives of each of the participating denominations, in those particular cities and neighborhoods, amounting to nearly 100 per cent in many instances. Each church has its own laymen's movement which works in harmony with the plans of the interdenominational organization.

This by no means exhausts the list of interdenominational organizations, having the interests of foreign missions at heart. The American Bible

Society does the Bible work for all missions, including publication of the Scriptures in the various languages of the fields, and their circulation by the society's own agents. The International Young Men's Christian Association has secretaries and associations in the various countries, doing in them work similar to that which it does here.

The Decennial Conference.—These several general movements and the rapid growth of interest in the foreign missionary cause, gave particular value to the Decennial Missionary Conference of 1910 for which preparations had been making for two years or more. There had been a general missionary conference in 1900, in New York City, to which the designation Ecumenical was applied. It was a large, imposing and influential body in which many churches, missionary societies, missionaries, native workers, ministers, and laymen participated, and its proceedings and papers fill two large octavo volumes.

In response to the invitation of the British and Irish societies it was agreed that the conference of 1910 should be held in Edinburgh. Coöperating committees were constituted in Great Britain, in the United States and Canada, and the continent of Europe, and arrangements were made for the largest missionary conference ever held. It was determined that the conference should be called the World Missionary Conference instead of the Ecumenical Missionary Conference as the gathering of 1900 was designated, as more simple and free from ecclesiastical significance; that it should, unlike the latter, be constituted on a strictly representative basis; that the body of its work should be prepared by eight large commissions of missionary experts; and that it should include in its basis of representation and in its program and proceedings those missions only which are conducted among non-Christian peoples. To make its scope more definite the words, "to consider missionary problems in relation to the non-Christian world" were added to the title, "The World Missionary Conference." Therefore, missions among Protestant, Catholics, and Oriental Christian peoples were strictly excluded from consideration.

The basis of representation allowed all foreign missionary societies, denominational or interdenominational, sending missionaries to non-Christian fields and administering funds for their support, to elect delegates to the conference in the proportion of one to every $20,000 of receipts, according to the average of the income of the three preceding years, societies having at least $10,000 income to be entitled to send one delegate and those having from $20,000 to $40,000 two delegates.

American Delegates.—Some sixty missionary societies of the United States and Canada were found to be qualified under the rule and all but two or three of these actually sent delegates to Edinburgh. Among them were Adventist, Baptist, Congregational, Disciples of Christ, Evangelical, Friends, Lutheran, Mennonite, Methodist, Moravian, Presbyterian, Protestant Episcopal, Reformed, United Brethren Societies, with ten interdenominational boards. The total of delegates from American societies was nearly 500. Delegates from Great Britain and Ireland, from the continent of Europe and from Australasia made a conference of upward of 1,100 duly appointed persons of both sexes and all races, including missionaries and native Christians from all fields. The conference was held in the hall of the United Free General Assembly, beginning June 14 and closing June 23.

A feature of wide interest and comment was the comprehensive character of the conference. Bodies recognizing no higher ecclesiastical authority than that which is exercised by the individual church or congregation, as Baptists and Congregationalists, were there; churches with a fully developed hierarchical system, as the Church of England and its branches; denominations holding to the presbyterial polity, established churches and free churches; those with an elaborate ritual and making much of the ordinances and those with no ritual and with no outward observance of the sacraments—all sections of Evangelical Protestantism were there participating cordially in apparent harmony, the Archbishop of Canterbury sharing the platform with a plain Presbyterian layman and Anglican bishops seeming not to be uneasy at the presence of Methodist bishops.

A parallel conference, composed of additional representatives to a nearly equal number, appointed in the same way, was held in Synod Hall, its program being similar to that of the official conference.

Lord Balfour presided at the opening session of the conference. Thereafter Dr. John R. Mott was chairman while the conference took up each day a report of one of the eight commissions.

The conference passed no motions, except as necessary to its organization and procedure, adopted no deliverances or resolutions, save only that it created a continuation committee, and gave to the world no platform of principles or policy. The elaborate commission reports were not formally adopted or approved, their conclusions and findings going out to the world on their own merits. These reports, the result of two years' labor, covered these subjects: Carrying the Gospel into all the non-Christian World; The Native Church and its Workers; Education in Relation to the Christianization of National Life; The Missionary Message in Relation to non-Christian Missions; The Preparation of Missionaries; The Home Base of Missions; Relation of Missions to Governments; Coöperation and Unity. Each report, based on expert inquiries and conclusions, will make a volume. They are intended to form a body of missionary literature for the study of all concerned in missionary work, either as missionaries or workers in the field, administrators or supporters, and are to be published with exhaustive statistics.

The conference attracted wide attention. King George of England sent a cordial message of greeting and good will; so did the colonial office of the German Government; and a most friendly letter from a Roman Catholic prelate of Italy was read, with an appreciation by ex-Pres. Roosevelt. The latter rejoiced in the assembling of representatives of many churches and many nations to combine in an endeavor to make world wide the common salvation.

Among the general facts brought out by the commission reports was that about two thirds of the world's population is in non-Christian fields; that there are 113,000,000 non-Christian peoples in Asia, Africa, Arabia, the Malay Archipelago, who have not yet even been touched by missionary operations; that many fields are underoccupied and that in no mission is the force at all adequate to the work to be done.

A statistical atlas was presented, showing 353 Evangelical missionary societies (not including auxiliary and coöperating societies), with missionaries among non-Christian peoples, of which 107 are American, 76 British, 57 Continental and 113 Australasian, African, and Asiatic. These societies have an annual income of $24,676,580, with a total force of 19,280 missionaries, 5,045 ordained native preachers, 1,925,205 communicants and 5,291,871 baptized and unbaptized adherents.

The conference provided for a continuation committee to carry out the purpose of the conference, finish any investigations left incomplete, promote unity and coöperation, and stimulate intercourse between different bodies of workers. The outcome is expected to be the organization of a permanent international missionary committee to represent all missionary societies in matters of common concern. The continuation committee consists of thirty-five persons, ten from North America, ten from the United Kingdom, ten from the continent of Europe, and one each from Australasia, Africa, China, Japan, and India.

United Churches in Various Countries.—It appears from the facts presented that the movement toward coöperation and union in the several mission fields has made great progress; the following is a summary:

(1) The Church of Christ in Japan embraces the missions of the Presbyterian Church (North), the Presbyterian Church (South), the Cumberland Presbyterian Church, the Reformed Church (Dutch), the Reformed Church (German), and the United Presbyterian Church of Scotland.

(2) The Methodist Church of Japan comprises the missions of the Methodist Episcopal Church, the Methodist Episcopal Church South, and the Methodist Church of Canada.

(3) The Presbyterian Church of Christ in China, consists of six synods, which embrace the missions of the Presbyterian churches, Northern and Southern, the Canada, the England, the Ireland and the United Free Church of Scotland, the Church of Scotland and the Reformed Church in America. The ecclesiastical system is not yet fully developed, a Federal council taking the place at present of a general assembly.

(4) The Presbyterian Church of India constituted by the missions of the Presbyterian Church (North), the Church of Scotland, the Presbyterian churches of Ireland, England, and Canada and the Reformed Church in America.

(5) The South India United Church comprises the missions of the American Board, the London Missionary Society, both Congregational, the Reformed Church in America and the United Free Church of Scotland.

(6) The Presbyterian Church of Korea, includes the missions of the Northern, Southern, Canadian, and Australian Presbyterian churches.

(7) The New Hebrides Presbyterian Synod, embraces the missions of the Presbyterian churches of Canada, Australia, and New Zealand and the United Free Church of Scotland.

(8) The Japan Church, consisting of missions of the Church of England and the Protestant Episcopal Church.

(9) The China Church, including the missions of the Church of England, the Anglican Church in Canada, and the Protestant Episcopal Church.

Other bodies, Congregational, Baptist, Lutheran, are considering plans for closer relations between their mission churches in the same fields, and wider projects of union have been outlined in China, Africa, and elsewhere, looking to the ultimate formation of one United Native Church in the several countries concerned.

Missions of Latin and Oriental Catholics. — The World Missionary Conference represented only Protestant missionary societies. World-wide missionary work is conducted by the Roman Catholic Church through its propaganda at Rome, the Propagation of the Faith, in Lyons, France, and other organizations. Missionary contributions for this purpose are collected by the Roman Catholics of the United States and other countries, and applied to the support of Catholic missions in all non-Christian countries. The Russian Orthodox Church also conducts missions in Japan and elsewhere.

NEW DENOMINATIONS

Pentecostal Church.—Notwithstanding the marked tendency toward co-operation and union among denominations of the United States, the total of separate ecclesiastical divisions does not decrease. In the last few years a number of new titles have appeared in the list of religious bodies, most of which, however, are small. Among them the Pentecostal Church of the Nazarene is the resultant of the union of a number of associations and conferences holding to the doctrines of holiness as their distinguishing tenet. The members of the new denomination, which covers most of the country, have come out of other denominations, particularly Methodist, whose peculiarities are retained to a considerable degree. They hold that holiness, or perfect love, is a divine blessing or grace separate and distinct from justification, and that it eradicates the seeds of sin from the soul and entirely subdues the sinful nature. It has upward of 15,000 members.

There has also come into existence a body known as the Churches of Christ as the result of a division in that large and prosperous denomination, the Disciples of Christ. The new division has upward of 2,600 churches and 156,000 communicants.

Cumberland Presbyterian Church.—The union of the Presbyterian (North) and the Cumberland Presbyterian churches, arranged a few years ago, has proved to be not complete. Those unwilling to enter the union, a considerable body of ministers and communicants, are maintaining the organization of the Cumberland branch, with its general assembly, and subordinate ecclesiastical judicatories. Synods, presbyteries, and churches have been divided, and litigation for the control of church property has been in progress. In some states the decisions of the Supreme Court have been in favor of the union, and in others have vindicated the claims of the Cumberland body. Cumberland Presbyterianism has from its origin, early in the nineteenth century, represented a type of theology neither wholly Calvinistic nor altogether Arminian. The outcome of an extensive revival in the Cumberland Valley, whence its name, it took what its leaders called the *via media* in theology, holding that grace is not irresistible, that man as a free agent may reject it, and that such rejection is reprobation and that election is not, therefore, unconditional.

The Baptists.—A similar approach has taken place between the Regular Baptists and the Free Baptists. The latter came into existence before the close of the eighteenth century in New England, whence it spread over other states. The movement differed from the Regular Baptists as to the leading doctrines of the Calvinistic system, which the latter held at that time quite strongly. The Freewill Baptists asserted the freedom of the will, and that election is not an "unconditional decree," but simply the purpose of God to save all who comply with the conditions of salvation and practiced open communion. For six years negotiations for closer relations between the two bodies have been in progress. The closer relations, as determined upon, at present affect only general denominational activities, such as "missionary and denominational work." The Free Baptist Conference, in 1910, gave its approval to the plan of union or coöperation as passed upon by its constituent bodies, known as yearly meetings. Of these, twenty-eight, representing 44,481 members, voted for the plan; and five, representing 1,721 members, voted against it, the balance not reporting. It is believed that no "dissatisfied minorities" will disturb the harmony of the action. The Regular Baptist Missionary and Publication Societies have changed their constitutions so as to be able to receive the mission funds and properties which the Free Baptists will transfer to them, so that they may hereafter conduct this work for both denominations.

The basis of union agreed upon at Boston in March, 1908, between committees of the two bodies, declares:

> (1) Baptists and Free Baptists are so near together in faith and practice that coöperation is not only desirable but may become practicable.
>
> (2) The original occasion and cause of separation between our two bodies have practically disappeared, and in all the essentials of Christian doctrine as well as in church administration and policy, we are substantially one.
>
> (3) Differences, if still existing, may be left, where the New Testament leaves them, to the teaching of the Scripture under the guidance of the Holy Spirit.

UNION MOVEMENT IN CANADA

The most remarkable union movement in the present century, considering the diverse polities and creeds involved, was well advanced in 1910. It is a project for the organic union of the Methodist, Presbyterian, and Congregational churches in the Dominion of Canada.

Many years ago the various Methodist branches in Canada united in one ecclesiastical organization, and the several Presbyterian bodies came together in a similar way. The results seemed to have begotten a desire for a still wider union. The Methodist General Conference of 1902 passed a resolution favoring consolidation and appointed a committee to meet similar committees, if they should be constituted by the Presbyterians and Congregationalists. These bodies responded to the advance and the outcome was a joint meeting of the three committees and the findings, which were favorable, were approved by the bodies concerned; larger committees were named, and the negotiations were steadily pursued until a satisfactory agreement was reached in 1905, which, when submitted to the chief courts of the denominations, was not rejected.

At the suggestion of the Presbyterian General Assembly of 1906, the Episcopalians and Baptists of Canada were invited to coöperate, but the latter definitely declined to do so, and no committee was appointed by the former.

The Presbyterian General Assembly in June, 1910, approved the basis of union submitted by the joint committee—184 to 73, and sent the basis down to the presbyteries for approval. Of 115 Congregational churches seventy-seven have voted, sixty-two in favor of union, and fifteen against it. It is said that the statement of faith is somewhat more elaborate than some of the Congregationalists care to have it.

The Methodist General Conference held in Vancouver, in Aug., 1910, after a full discussion, voted overwhelmingly to approve the union project. The lay members are now to pass the basis under consideration at quarterly, district, and annual conferences. The union, if all goes well, may be consummated some time in 1912. The united body would have about 630,000 lay members. The Methodist body has 338,000, the Presbyterian 280,000, and the Congregational about 12,000.

The Methodist Church of Canada.—The quadrennial general conference of the Methodist Church of Canada, met in Vancouver, in Aug., 1910. It has never been held west of Winnipeg before. Besides approving the project of union with the Presbyterians and Congregationalists by a vote of 220 to 35, the conference reëlected Dr. A. Carman, general superintendent, and chose Dr. S. D. Chown to be his associate in that office. A subject of much concern was the conservation of sound theological training. The action taken was to provide for a committee of examination to which complaints of unsound teaching may be made, a trial to follow preliminary investigation if the facts seem to warrant it. The clause in the *Discipline* interpreting the general rules as forbidding gambling, horseracing, dancing, theatergoing, etc., was replaced by a statement of a general character.

NATIONAL CONGREGATIONAL COUNCIL

The fourteenth meeting of this triennial body was held in Boston, Mass., beginning Oct. 11, 1910, Dr. Nehemiah Boynton, moderator. The question of central interest related to the council itself. Should it become a representative body, its moderator and secretary serving as denominational representatives, and develop administrative relations to the seven benevolent societies, and should it hold annual instead of triennial sessions? The outcome was the adoption of a report of a commission of twenty-five, declaring in effect that the changes in polity, adopted in 1907, are sound and progressive; that the council is already exercising administrative functions, and is in favor of a further development of them; that administrative relations with the seven national societies should be developed; that the moderator and secretary of the council should give the denomination administrative service, and that a commission of fifteen on polity be appointed to report to the next council a consistent scheme of administration. The function of the council hitherto, in accordance with the accepted principles of Congregational polity, has been regarded as almost exclusively advisory. It is now to develop administrative functions.

The question which caused most discussion was the proposition to constitute the delegates of the council the voting membership of the seven denominational societies, with the addition of members-at-large. There was a minority report on this point which declared the proposition "revolutionary, un-Congregational and dangerous," and intimated that it would logically lead to "the usurpation of legislative and judicial functions," contrary to the genius of Congregationalism. The reply was, "We do not want to Presbyterianize Congregationalism, but to Congregationalize Congregationalism." The vote on the motion to strike out the proposition was lost 132 to 143.

Centenary of the American Board.—The centenary of the organization of the American Board of Commissioners for Foreign Missions was celebrated and its annual session also held Oct. 11–14, simultaneously and in harmony with the meetings of the national Congregational council. The celebration included fraternal addresses from boards of denominations which formerly did their foreign missionary work through the American Board, a visit to Bradford, where the first missionaries sent out were ordained, a report of the advances made decade by decade through the century, and an announcement that the Board's appeal for an endowment fund for its higher educational institutions abroad had resulted in pledges to $1,200,000 from eleven persons.

THE METHODIST EPISCOPAL CHURCH, SOUTH

The general conference of the Methodist Episcopal Church, South, which meets every four years, was held in Asheville, N. C., in May, 1910. Forty-four annual conferences were represented by clerical and lay delegates to the number of 310. The Church has 11,570 traveling and local preachers and 1,822,402 lay members.

The conference in its legislation provided for a church conference, something new to the Methodist discipline, to consist of all the members of the local Church, to be held quarterly under the presidency of the pastor, and to consider all the interests of the society.

The pastoral term, which is limited to four years, was left unchanged, after much discussion.

Provision was made for the unification of the missionary organizations of the Church. The Board of Missions, home and foreign, and the Woman's Home and Foreign Missionary Societies were joined in one organization, the Board of Missions, with two departments, home and foreign. The board consists of thirty managers, ten ministers, ten laymen and ten women, together with the bishops, the treasurer and assistant treasurer, the secretary of the Board of Church Extension and the president of the Laymen's Missionary Movement.

The most strenuous discussion was concerning the title of the Church. Propositions for change of name have been before the General Conference repeatedly and once prevailed, but failed of ratification by the annual conferences. The Episcopal address had advised that the old well-known name be retained unchanged. But there was pressure for a change, particularly among the delegates of the conferences in the West, who felt that "South" is provincial and embarrassing. The conference voted 152 to 83 to take the name, "The Methodist Church"; but the bishops interposed their veto, and finally the designation "The Methodist Episcopal Church in America" was adopted, 150 to 63. The change does not become effective until three fourths of the members of the annual conferences approve it.

The conference received many petitions asking that women be admitted, as in the Methodist Episcopal Church, to official bodies. There had been a wide agitation in favor of this measure, but by a large vote the conference determined against it.

On behalf of the Joint Commission on Federation, representing the Methodist Episcopal Church and the Methodist Episcopal Church, South, a report was made recommending that, in consideration of the growth of the spirit of fraternity and of practical federation, a Federal council be created for the "two churches, which, without interfering with the autonomy of either Church, and having no legislative functions, shall yet be invested with advisory powers in regard to world-wide missions, Christian education, and the evangelization of the unchurched masses, and, furthermore, in order to carry into effect the purpose of the two general conferences in the creation of a commission on federation, and to secure the direct application of the conclusion reached in the work of the said commission, shall also have power to hear and finally determine, without appeal from its decisions, all cases of conflict or misunderstanding between the two branches of Methodism." This was enacted by the conference and marks an important step forward between the two largest Methodist bodies in the world.

New Bishops.—The death of six bishops during the quadrennium, the retirement of Bishop Key and the partial retirement of Bishops Morrison and Wilson, made it necessary to elect seven new bishops to fill the vacancies and strengthen the board.

The choice fell upon Prof. Collins Denny, of Vanderbilt University; Pres. John C. Kilgo, of Trinity College, Durham, N. C.; Pres. Wm. B. Murragh, of Millsaps College, Jackson, Miss.; Walter R. Lambuth, Missionary Secretary, Pres. Richard H. Waterhouse, of Emory and Henry College, Va.; Prof. Edwin DuBose Mouzan, Southwestern University, Pres. James H. McCoy, Birmingham College, Ala.

Vanderbilt University.—A conflict as to the control of Vanderbilt University has been in progress some years. Formerly the bishops were regarded as *ex-officio* members of the board of trustees; then their rights became a matter of dispute under the charter, and five of them were elected as trustees, the by-law recognizing all as members being rescinded. This action was resisted, and the question the General Conference was called upon to settle was as to Church control and the rights of the bishops. The commission appointed four years ago reported that the university, under the laws of Tennessee, belongs to the Church and the general conference alone has the right to elect the board of trustees, that the bishops have the rights of visitors and may be elected trustees. The Conference accepted this view.

THE ROMAN CATHOLIC CHURCH

A Eucharistic congress in Montreal, Can., in the autumn of 1910, attended by Cardinal Vannutelli, as special representative of the Pope, the Cardinal Primate of Ireland, Cardinal Gibbons, and many other high ecclesiastical dignitaries, was the most brilliant Church assembly ever seen in the dominion. An address by Premier Laurier was a feature of the congress. After the congress Cardinal Vannutelli and Cardinal Logue came to the United States and participated in the consecration of St. Patrick's Cathedral, which was dedicated in 1879, but could not be consecrated until it was free of debt.

The Papal Legate made report to the Pope, on his return to Rome, in which he referred to the astonishing growth of the American nation, for which he predicted a magnificent future. He spoke of the Catholic Church as occupying a prominent position in American life, the Catholics being both staunch patriotic citizens and zealous churchmen, thus constituting a strong guaranty of order and a barrier against subversive elements.

The refusal of the Pope to grant audiences, on separate occasions, to ex-Vice Pres. Fairbanks and ex-Pres. Roosevelt, except on condition that they would agree not to deliver addresses at the American Methodist Mission in Rome, occasioned no little public discussion, in which prominent Roman Catholic ecclesiastics made attacks upon the methods and spirit of the Methodist Mission and were answered in defence of the mission. The controversy was generally recognized as almost entirely of a personal nature, the Pope having a right to refuse an audience to any person, and those asking for audiences having the right to accept or decline the conditions imposed.

The Church is steadily growing in the United States. According to the official Catholic directory, there are 14,347,027 Catholics, or Catholic population, in the United States, exclusive of Porto Rico and the Philippines. The growth of the year 1909 was 111,576. The Catholic population by states shows that there are seven states which have more than half a million, each as follows: New York, 2,722,649; Pennsylvania, 1,494,766; Illinois, 1,443,752; Massachusetts, 1,373,772; Ohio, 619,265; Louisiana, 557,431; Wisconsin, 532,217.

THE PROTESTANT EPISCOPAL CHURCH

The triennial general convention of the Protestant Episcopal Church was held in Oct., 1910, in Cincinnati. It consists of two coördinate houses—the House of Bishops and the House of Clerical and Lay Deputies. The concurrence of the orders, lay and clerical, by vote, as well as of the two houses, is required to adopt any legislation. The church has 5,573 clergy and 937,861 communicants.

A matter of perennial interest in the denomination is its name. In many general conventions it has been the subject of discussion, proposals to change it having always failed of adoption. It was brought forward at Cincinnati by George Wharton Pepper, representing a preliminary conference of clerical and lay deputies which had arrived at a definite understanding. Mr. Pepper proposed that the change should be brought about by revising the title page of the *Book of Common Prayer* so as to drop from it the word "Protestant," which the church has borne from the beginning in the United States.

The proposal of Mr. Pepper was referred to the committee on the Prayer Book, which brought in a majority and a minority report. The majority report was as follows:

> The eirenic import of the proposed joint resolutions is clearly evident. When, however, we consider the merits of the proposal itself we discover so wide a divergence of view within the committee as to make it apparent that what may have been offered as an eirenicon is certain to prove a cause of discord. We believe that so momentous a change should not be initiated without substantial unanimity. We, therefore, deem that the proposal to submit the matter to the vote of this convention is inexpedient.

The minority report recognized and approved "the eirenic character of the particular change proposed," and recommended its adoption.

The minority report was strongly supported. It was said that to drop the word "Protestant" would bring the American Episcopal Church into truer touch with the Roman Catholic Church, while, as to the Protestant bodies, it would do much to clear the air and make a rational approach possible. The proposed change is affirmative and inclusive, and looks forward to a day of larger catholicity. It does not at all indicate that the church is less in touch with those denominations called Protestant, or that it surrenders the principles underlying the reformation.

In opposition it was contended that it was a proposal simply to change the name of the church, and that if this was the real object it could better be accomplished by making a change in Article VIII. Perplexities in foreign countries arising out of the use of the present name ought not to be allowed to control the situation at home. The minority report was defeated by the narrowest possible vote. In the clerical order, sixty-seven dioceses voting, forty-two voted aye, fifteen voted no, and ten were divided. In the lay order, out of sixty-three dioceses, four not voting, thirty-one voted aye, twenty-four no, and eight were divided. A change of a single lay deputy's vote in any one of these eight dioceses would have changed the result. The minority report having failed of adoption by nonconcurrence of orders, precisely as in 1907, the House adopted the majority report with unanimity.

Suffragan Bishops.—The convention provided an innovation in the form of suffragan bishops. The Church of England has them, but they are new in this country. They differ from coadjutor bishops in not having the right of succession to the diocesan. They are to be under his direction. Unlike English suffragans they do not cease to be suffragans in the event of the diocese becoming vacant, and they may at any time be elected bishop of their own or any other diocese. They have seats but not votes in the House of Bishops. They were asked for because dioceses in some cities require more episcopal supervision than one man can give. It is possible that advantage may be taken of the new canon to provide episcopal supervision for Swedes, Germans, and negroes. The House of Deputies voted decidedly against a proposition for race bishops. The vote in favor of suffragans was large. The House of Bishops adopted it by a large majority.

The general convention resolved to observe by appropriate exercises the tri-centenary of the King James version of the Bible, and to invite other Christian bodies to participate in the exercises: and it authorized the use of both the American and English revised version.

In view of the interest aroused in

the Protestant Episcopal Church by what is known as the Emmanuel Movement, a proposal to provide an office for the unction of the sick looking to a restoration to health, and not in anticipation of death, received large attention. The proposal carried the clerical order by forty-one dioceses to seventeen, with nine divided, but failed in the lay order by twenty-seven dioceses to thirty-two, four being divided. In the House of Bishops the measure was carried by a vote of three to one.

The central point of interest was a proposal by Dr. Wm. T. Manning, of New York, upon which this action was taken: That a joint commission be appointed to bring about a conference for the consideration of questions touching faith and order, and that all Christian communions throughout the world which confess our Lord Jesus Christ as God and Saviour be asked to unite with us in arranging for and conducting such a conference. The commission shall consist of seven bishops, appointed by the chairman of the House of Bishops, and seven presbyters and seven laymen, appointed by the president of the House of Deputies, and shall have power to add to its number and to fill any vacancies occurring before the next general convention.

This resolution was carried with unanimity in both Houses, and a joint commission of bishops and deputies appointed to make arrangements for the proposed conference. The commission chose Bishop Anderson, of Chicago, president; J. P. Morgan, who gave $100,000 toward the necessary expenses, treasurer, and Robert H. Gardiner, of Gardiner, Me., secretary. A committee on plan and scope has been appointed, with instructions to prepare a statement as to the objects and methods of procedure. Dr. Wm. T. Manning, Bishops Anderson, Brent, and Kinsman, Dr. Rhinelander, Francis Lynde Stetson, and Robert H. Gardiner constitute this committee. It is intimated that the Roman and eastern orthodox churches as well as the Protestant churches will be invited to the conference.

New Bishops.—Five new missionary districts were created and bishops elected for them. One old diocese was divided, and provision made for the election of suffragan bishops, to be available in dioceses where division is impracticable. One new district is in China, the others in the Rocky Mountain and coast regions of the United States. In New York, Chicago, Boston, Philadelphia, and some other cities the Episcopal Church has come to have so many communicants that one bishop is unable to shepherd all. Yet division seems unwise, owing to compact territory, and so new assistant bishops were provided for. These are bishops in spiritual order, but in administrative order they work under direction of the diocesan.

The Protestant Episcopal Church does its missionary work through one official society which covers both home and foreign work. Complaint has been general for many years that its control was not representative of the growing West. In 1907 the country was divided into eight missionary departments. At Cincinnati, in 1910, a new basis of the official society was adopted providing that the forty-eight men forming the controlling body shall be elected half by the convention and half by the eight departments. Further to emphasize the missionary spirit a bishop was chosen to head the society, instead of a priest as heretofore, and he was made president instead of general secretary. Bishop Lloyd, coadjutor of Virginia, is the new administrative head of the society, and leaves his diocesan work to come back to the office after an absence as general secretary of less than a year.

In the Protestant Episcopal Church, chiefly through the leadership of laymen, efforts are being made to create in each diocese a missionary society that shall do all missionary work of the diocese.

Remarriage After Divorce.—The upper house of the convention, composed of more than one hundred bishops, passed by a large majority a measure prohibiting the remarriage under church authority of any person having a husband or wife living, without regard to guilt or innocence of either party. The measure failed in the lower body, composed of priests and laymen, largely because of the lateness of the session. It is thought that in 1913 such measure will become law by an almost unanimous vote of both houses.

The commission on work among the Jews referred in its report to the collect for Good Friday in which Jews are classified with "Turks, infidels, and heretics," insisting that this phrase ought to be amended. The convention considered a proposal that "those outside the true faith" be substituted for the words which many characterized as objectionable in this age of good feeling; the House of Deputies, after a long discussion, rejected an amendment which the House of Bishops had approved, chiefly because time to consider the phraseology is required.

A plan for the election of the presiding bishop after the term of Presiding Bishop Tuttle shall have ended was sent down to the dioceses. Heretofore the position has been filled by seniority for life. Hereafter a choice is to be made, the House of Bishops to select and the House of Deputies to confirm, if the dioceses approve.

The action of the House of Deputies on a resolution proposing an unfavorable response to the Lambeth conference plan of a consultative body for all branches of the Anglican Church is regarded as significant of the new purpose of the church. The House adopted the resolution unanimously. It declares that the plan might "imperil the independence of this church," therefore "this House affirms its conviction that any legislative connection with the English Church would be an obstacle to the progress of this church in America."

The Churchman, in a review of the work of the general convention, says it gives inspiring promise for the future and adds: "Not since the days when the Preface to our Prayer Book was written has there been such a corporate acknowledgment of this church of independent initiative and responsibility, nor such a recognition of this church's dependence on all the churches and peoples that work in the Name of the Christ of God."

CENSUS OF RELIGIOUS BODIES

The United States census of religious bodies for 1906, made public in 1910, shows a value of church property, including church buildings, sites, furniture, organs, bells, etc., for all denominations of $1,257,575,867, an increase since the previous census of 1890 of $578,149,378, or upward of eighty-five per cent in the sixteen years. The greatest absolute gain was that of the Roman Catholic Church of $174,515,441, or nearly 148 per cent.

The increase in the per capita value of church property, on the basis of the population, was $4.14 since 1890, when the per capita value was $10.79; in 1906 it was $14.93. Upon the aggregate value of church property there was reported a total indebtedness of $108,050,946, which is 8.6 per cent of the valuation.

The value of parsonage property amounted to $143,495,853. The total number of parsonages was 54,214, of which the Methodist bodies had 20,837, the Presbyterian bodies 5,417, and the Roman Catholic Church 6,360.

In the distribution of communicants by states New York leads with 3,591,974, in a population of 8,226,990; Pennsylvania comes second, with 2,977,022, in a population of 6,928,515; Illinois, third, with 2,077,197, in a population of 5,418,670; Ohio, fourth, with 1,742,873, in a population of 4,448,677, and Massachusetts, fifth, with 1,562,621, in a population of 3,043,346. Texas, which is the fifth state in population, is the sixth in number of communicants. Most of the Southern states occupy a higher place in the list according to communicants than in the list according to population; so also do most of the New England States, Connecticut, for example, ranking as the thirtieth state in order of population and as the twenty-fourth state in number of communicants.

One of the notable results of the census is the showing of the advance of the Roman Catholic Church in the various states. Since 1890, when that denomination had a majority, or plurality, of communicants in thirteen states, Maine, New Hampshire, Vermont, New Jersey, Michigan, and Wisconsin, formerly showing a majority of Protestant communicants, are now in the Catholic column, while Minnesota has changed from the Catholic to the Protestant column. In 1890 the Protestant bodies had sixty-eight per cent of the total of communicants in the United States and the Roman Catholic Church 30.3. The latter now has 36.7 and the former only 61.6.

The states in which the Baptists predominate are Alabama, Arkansas, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Texas and Virginia—eleven. Those in which the Methodist bodies predominate are Delaware, Indiana, Kansas, Oklahoma, and West Virginia—five. Those in which the Roman Catholic Church leads number thirty-one. The Latter-Day Saints have Utah and Idaho. The Roman Catholic Church is second in six states, the Baptist bodies in seven states, the Methodist bodies in twenty-five states, the Congregationalists in four, and the Lutherans in four.

As between church members and nonchurch members, it appears that there has, since 1890, been a reduction in the proportion of the latter. Then it was 67.3 per cent, now it is 60.9. The highest percentage of nonchurch members reported by any state is 81.8 by Oklahoma; next comes Wyoming with 76.9; then Oregon with 74.7, and then West Virginia with seventy-two.

The Roman Catholic Church has a majority of its communicants in cities of 25,000 and upward population. Only 47.8 per cent are outside these cities; the Protestant Episcopal Church reports a similar proportion, 48.8, while the Methodist bodies have nearly eighty-six per cent and the Baptist bodies nearly eighty-seven per cent outside the leading cities. Only about eleven per cent of the Jewish members are outside the cities.

The census gives the first general statistics showing sex in church membership. It has been generally supposed that the number of women to men is about as two to one, with an exception in the case of the Friends. Taking the aggregate of church members for all denominations, it appears that 43.1 per cent are males and 56.9 per cent females. In the Protestant bodies, the proportion is 39.3 to 60.7. In the Roman Catholic Church, the sexes are pretty nearly evenly divided, 49.3 male and 50.7 female.

An Ancient Biblical Manuscript.—An ancient manuscript, unearthed in the neighborhood of the Tigris, identified as "The Odes and Psalms of Solomon," is spoken of by scholars as second only in importance to the "Teaching of the Apostles," found some years ago. The document is believed to belong to the first century of the Christian era and to represent Christianity of that period. It contains "mystical compositions of a very high order," worthy of a place in the world's religious literature and promises to open up to the critical student unknown fields of extraordinary interest, and to throw light upon the connecting links of the old and the new dispensation.

International Y. M. C. A. — The thirty-seventh international convention of the Young Men's Christian Associations of North America was held in Toronto, Can., in Oct., 1910. The triennial report indicated that the endowment fund had reached $1,174,886 on Jan. 1, 1910. Reference was made to the gifts of Mrs. Russell Sage and of the late Mrs. Wm. E. Dodge of a headquarters building to cost $1,500,000. The associations of North America have a membership of 496,000 men and boys, a gain of 13 per cent in the last three years. Nearly 700 associations now occupy their own buildings, representing an aggregate value of $51,000,000, an increase since 1907 of $17,000,000. The annual expenditures have advanced to $7,081,043. The foreign work is to be extended into ten countries. The foreign secretaries have increased from 74 to 106, and a fund of $1,315,000 is being raised for the work in the Far East and in the West Indies.

Union Movements.—Movements toward organic union among denominations are becoming increasingly numerous. There are committees representing the Evangelical Association and the United Evangelical Church, which were divided fifteen or twenty years ago; the American Wesleyan and Free Methodist branches, kindred bodies; the Methodist Episcopal Church and the Methodist Protestant Church, and several of the colored Methodist bodies. An incorporated society, known as the "Christian Unity Foundation" was organized in New York during the past year, with Bishop Courtney as president, Bishops Doane, Vincent, Anderson, Lines, and Greer as vice presidents and the Rev. Arthur Lowndes, D.D., as secretary, whose object is to promote Christian unity at home and throughout the world, by gathering and disseminating accurate information as to the faith and works of all Christian bodies, setting forth the perils and wastes of divisions, devising practical methods of federation, promoting comity, and bringing together all who are laboring in the same field. The officers and members of the foundation all belong to the Protestant Episcopal Church.

Statistics of Religious Bodies.—Annual statistics of the religious bodies of the United States, prepared for *The Christian Advocate* by Dr. H. K. Carroll, show a persistent advance in number of ministers, churches and communicants. The increase for 1909 aggregated 4,023 ministers, 4,726 churches and 791,713 communicants. The largest net gain of communicants for the year among Protestant bodies was reported for the two branches of the Disciples of Christ, amounting to 134,592, in a total of 1,430,015. The Baptist bodies came next with 91,933, the Lutherans, third, with 81,311, and the Methodists, fourth, with 54,927. The Roman Catholic gain in "population" was upward of 111,000.

The following table of communicants shows the order, according to numbers, of some of the various denominations in 1909 compared with 1890:

Denominations	Rank in 1909	Communicants	Rank in 1890	Communicants
Roman Catholic	1	12,354,596	1	6,231,417
Methodist Episcopal	2	3,159,913	2	2,240,354
Regular Baptist (South)	3	2,139,080	4	1,280,066
Regular Baptist (Colored)	4	1,874,261	3	1,348,989
Methodist Episcopal (South)	5	1,780,778	5	1,209,976
Presbyterian (Northern)	6	1,311,828	7	788,244
Disciples of Christ	7	1,273,357	8	641,051
Regular Baptist (North)	8	1,176,380	6	800,450
Protestant Episcopal	9	912,123	9	532,054
Congregationalist	10	732,500	10	512,771
Lutheran Synodical Conference	11	726,526	12	357,153
African Methodist Episcopal (Zion)	12	545,681	13	349,788
Lutheran General Council	13	452,818	14	324,846
African Methodist Episcopal	14	452,126	11	452,725
Latter-Day Saints	15	350,000	21	144,352
Reformed (German)	16	293,836	15	204,018
United Brethren	17	285,019	16	202,474
Lutheran General Synod	18	284,805	20	164,640
Presbyterian (Southern)	19	269,733	18	179,721
German Evangelical Synod	20	249,137	17	187,432
Colored Methodist Episcopal	21	233,911	24	129,383
Methodist Protestant	22	188,122	22	141,989
United Norwegian Lutheran	23	160,645	26	119,972
Spiritualists	24	150,000	39	45,030
United Presbyterian	25	132,925	27	94,402
Greek Orthodox (Catholic)	26	130,000	138	100
Lutheran Synod of Ohio	27	120,031	33	69,505
Reformed (Dutch)	28	116,174	28	92,970
Evangelical Association	29	106,957	23	133,313
Primitive Baptist	30	102,311	25	121,347
Dunkard Brethren (Conservative)	31	100,000	35	61,101

THE EMMANUEL MOVEMENT

MARCUS BENJAMIN

The Emmanuel movement, which was started in 1905, takes its name from the Emmanuel (Protestant Episcopal) Church in Boston, Mass., of which the Rev. Elwood Worcester, D.D., has been the rector since 1904.

Its origin has been described by Dr. Worcester, substantially as springing from the critical study of the New Testament, and the study of physiological psychology. From teachers in the former science especially from Renan, Harnack, and Theodor Keim, he learned something of the life of Jesus, the purposes that actuated Him, and the tasks to which He consecrated His life. From Fechner, Wundt, and James, he learned how delicate and powerful an instrument for the improvement of human life modern psychology places in our hands.

From these two lines of thought he developed the movement, the meaning and aim of which have been most satisfactorily expressed in the following sentence: "It is to bring into effective coöperation the physician, the psychologically trained clergyman, and the trained social worker in the alleviation and arrest of certain disorders of the nervous system which are now generally regarded as involving some weakness or defect of character or more or less complete mental dissociation."

After careful examination of the person by a regular physician, and upon whose advice treatment is to be given, the patient is brought into a condition of relaxation in order that the relaxed will may be reënergized. This treatment is then continued, under the direction of the clergyman always, until the conscience of the patient is aroused to the necessity of the desired action, and this treatment is continued until a cure is effected. It being always borne in mind that the treatment is applied to those diseases or disorders which are termed nervous or functional, or to undesirable habits.

Thus far the treatment has been given chiefly in Boston by the clergy of the Emmanuel Church there, and in New York City by the clergy of St. Mark's Church.

There has been published concerning this movement: *Religion and Medicine, The Moral Control of Nervous Disorders*, by Elwood Worcester, Samuel McComb, of the Emmanuel Church, and Dr. Isador H. Coriat, New York, 1908; *The Living Word*, by Elwood Worcester, 1908; *The Christian Religion as a Healing Power, A Defense and Exposition of the Emmanuel Movement*, by Elwood Worcester and Samuel McComb, 1909; also, *The Emmanuel Movement in a New England Town*, by Lyman P. Powell, with bibliography, 1909.

XXXI. ART AND ARCHÆOLOGY

GROWTH OF ART IN AMERICA

Florence N. Levy

Early American Art.—The earliest artists in this country were Europeans who came as settlers. The first of any merit was Gustavus Hesselius (1682–1755), who landed at Christiana, now Wilmington, Del., in May, 1711; his principal work, a "Last Supper," for the altar of St. Barnabas's Church in Queen Anne's Parish, Md., was destroyed by fire, but some portraits by him still exist. John Smibert (1684–1751), who settled in Boston, painted the first group in America, "Bishop Berkeley and His Family," which is now at Yale University. To-day the records show nearly 3,500 painters, sculptors, and illustrators, and over 2,500 architects of recognized standing in the United States.

In 1791 Charles Willson Peale tried to found an art school in Philadelphia. He was not successful but his attempt led, in 1805, to the organization of the Pennsylvania Academy of the Fine Arts, the oldest art institution in this country. The National Academy of Design, organized in 1826, traces its origin back to 1802 when the New York Academy of Fine Arts was founded.

American Federation of Arts.—By contrast, during 1910, the most important event in the art life of the United States, the one that reaches the largest number of people, was the first annual convention of the American Federation of Arts, held in May, 1910, at Washington, D. C. The federation consists of 103 chapters (societies) representing in the aggregate about 50,000 persons, and over 1,000 individual associate members. All the arts are represented—architecture, painting, sculpture, music, literature, the theater and the handicrafts. It is chiefly a clearing house and is of greatest service to the smaller cities which have no permanent art gallery. Its work, however, is not limited to this, for it is sending exhibitions to Indianapolis and Chicago as well as to the far South and West.

Municipal Art Organizations.—City and state art commissions are growing in number, New York having been the first city to institute this important work. Wide interest in municipal improvement is testified by the number of municipal art societies and similar organizations. New York, Boston, Chicago, and hundreds of the smaller cities are trying to improve the appearance of their town and make it a healthier and more livable place. The regulation of traffic, of advertising signs, and the smoke nuisance are strongly urged, beauty not being confined to architecture, sculpture, and painting.

Museums.—Among the art museums the past year is notable for the opening of a new wing at the Metropolitan Museum of Art, in New York, where there has been installed, in a series of twenty-five galleries, the Hoentschel collection of Gothic and Renaissance art objects, partly lent and partly given by J. Pierpont Morgan, and the Bolles collection of early American furniture presented by Mrs. Russell Sage. In accordance with the museum's policy of holding special loan exhibitions, Dutch paintings and early American furniture were exhibited in the autumn of 1909 as part of the Hudson-Fulton celebration; March 15, 1910, an exhibition of paintings by J. McNeill Whistler was opened, and Oriental rugs of the fifteenth, sixteenth, and seventeenth centuries were on view Nov. 1, 1910, to Jan. 15, 1911.

In 1909 the Boston Museum of Fine

Arts moved into its new building, where the art objects are displayed to excellent advantage in comparatively small galleries; the balance of the collection being reserved in what are known as the studio rooms. The director, in writing of the aims of the Boston Museum, says:

> A controlling purpose in the scheme for the new building has been the aim to fit the museum for a wider rôle in the city than it has hitherto filled. Works of art are so many tangible shapes assumed by man's fancy in the past, and any interest directly or indirectly connected with the life of the imagination has, and should be treated as having, a natural home in a museum of art. The new building contains ample galleries for those who seek the food offered eyes and mind and heart by painting and sculpture; rooms apart for those who pursue scientific or technical ends through the study of examples from the history of art; halls where lectures and classes may be held and which may be appropriately offered for meetings and conventions proposed for purposes germane to any fine art; a central concourse where music can be well heard and it is hoped will be heard; and courts offering a theater for reading and dramatic recitation, and a setting for pageantry and festival.

A gift of $150,000 made to the city of New Orleans in Feb., 1910, led to the erection in the City Park of the Isaac Delgardo Museum of Art. Toledo is building a new art gallery, and Detroit has just purchased two blocks in the heart of the city for a new art museum and school of industrial art. The Morgan Memorial, the art annex to the Wadsworth Athenæum at Hartford, Conn., was dedicated in Feb., 1910.

The educational work of the art museums is constantly growing. They are no longer satisfied to serve as storage warehouses, but realize that they have an educational duty to perform which is just as important as that of the library. The first museum to undertake this work systematically and the one which has carried it farthest is the Boston Museum. Others that are doing a great deal are those in Toledo, Detroit, New York, St. Louis, and Indianapolis. In many of the museums the superintendent of the Board of Education and the Director of Art in the public schools are ex-officio, directors of the museum.

That the United States would take the lead in popularizing art museums, in 1914, was predicted by George Brown Goode in an address before the Brooklyn Institute of Arts and Sciences on Feb. 28, 1889. He reasoned that the first great exposition was held in London in 1851, and that in thirty-eight years the South Kensington Museum had reached its wonderful development. Taking, therefore, the first exposition in this country, the Centennial in Philadelphia in 1876, he allowed the same number of years for our development along these lines.

The library is the art center in the smaller cities, a museum of art being frequently an outgrowth of the exhibitions held in the library. This is the case in Newark, N. J., where the Newark Art Museum was established in 1909 in the library building. St. Paul, Minn., Des Moines, Ia., and Houston, Tex., are others which show the close connection.

Exhibitions.—Exhibitions of paintings are held more generally than of any other form of art expression. The most important exhibitions and the prizes awarded during 1910 ($300 and over) were as follows: National Academy of Design — Thomas B. Clarke Prize to Frederick J. Waugh; First Hallgarten Prize to Gifford Beal; Julia A. Shaw Memorial Prize to Susan Watkins; Inness Gold Medal to J. Francis Murphy; Saltus Medal for Merit to Douglas Volk. Art Institute of Chicago — Harris Prizes to Frank W. Benson and to Edward W. Redfield; Fine Arts Building Prize to T. C. Steele. Pennsylvania Academy of the Fine Arts—Temple Gold Medal to Howard Gardiner Cushing; Walter Lippincott Prize to J. Alden Weir. Carnegie Institute, Pittsburg—Medal of the First Class to William Orpen; Medal of the Second Class to Karl Anderson; Medal of the Third Class to Edward F. Rook. The 1910 Medal of Honor for Painting was awarded by the Architectural League of New York to Kenyon Cox.

Sculpture. — The only society of sculptors is the National Sculpture Society, with headquarters in New York. A few pieces of sculpture are always included in the exhibitions of the National Academy of Design, the Art Institute of Chicago, and that of the Pennsylvania Academy of the Fine Arts, but the difficulties connected with installing exhibitions of sculpture prevent its being shown more frequently. Monumental sculpture in public parks and squares keeps the prominent sculptors busy. One of the most important pieces unveiled during the year was the soldiers' and sailors' monument at Malden, Mass., by Bela L. Pratt.

Handicrafts.—Within the past few years there has been wide interest in the handicraft movement, and the National League of Handicraft Societies consists of thirty-one affiliated organizations; the two most important being those in Boston and New York.

Obituary.—The deaths among American architects, painters, sculptors, and illustrators during the year 1910, as recorded in the *American Art Annual*, number fifty-five, include such well-known painters as Frank Fowler, Winslow Homer, Francis Lathrop, Frederic Remington, Walter Shirlaw, Worthington Whittredge, and John LaFarge. J. Q. A. Ward, the dean of American sculptors and the first president of the National Sculpture Society, died May 1, 1910, and Henry Linder was also a member of the Sculpture Society.

Sales.—The interest in forming collections of paintings is shown from the fact that in twenty auction sales of paintings held in New York during the season of 1909–10, 2,483 pictures changed hands at a total cost of $2,596,939. The most important of these sales was that of the Charles T. Yerkes estate, which brought $1,695,550 for 198 pictures, an average of $856 each; the highest price being $137,000 for the "Portrait of a Woman," by Franz Hals. This was the highest price ever paid for a picture in the auction rooms of this country. The total for the H. S. Henry estate was $255,750 for twenty-one paintings, an average of $1,265 each. Another important sale was the collection of the late Theron R. Butler, consisting of seventy-five paintings, which were sold for $264,385.

Professional Art Schools.—The training of future artists is carried on in over a hundred professional art schools, and a tabulated report of these in the *American Art Annual* for 1910 shows a registration of 28,781, with 2,405 additional in thirty-seven summer schools. The total includes the students of architecture. An analysis of the tables shows eighteen schools where industrial art is taught, and the enrollment furnished by ten of these reaches a total of 2,402; 130 schools report 7,755 pupils in evening classes.

Instruction in Elementary Schools.—The purpose of the instruction in art and manual training in the public schools throughout the country is twofold—to teach drawing for use in the various trades and to train the taste of the pupils, thus creating an appreciative audience for the visual arts. The children are being taught to express themselves in line, mass, and color, as well as by the spoken and written word. For the last meeting of the International Congress on Art Teaching, held in London, Aug., 1908, the American committee prepared a volume on *Art Education in the Public Schools of the United States*, which sets forth the aims and purposes of the art work being carried on in the schools. It consists of a series of essays by prominent art teachers, and contains over 100 illustrations.

The wide extent of the art interest in the United States has led to the publication of the *American Art Annual*, and Volume VIII covers the activities of the year ending Oct. 1, 1910. Among the regular features are tabulated lists of paintings sold at auction; new art books; art magazines; obituaries; reports of societies and museums; biographical directories (in succeeding editions) of painters, sculptors, illustrators, architects, handicraft workers, teachers, lecturers, writers, and dealers. Each volume has a special feature, the most important being *The First Century and a Half of American Art*, by Charles Henry Hart (vol. i, 1898); *Æsthetic Training; Its Development in the Elementary School*, by Dr. James P. Haney, and *Art Education an Important Factor in Industrial Development*, by Halsey C. Ives (vol. vi, 1907), and *Professional Art Schools* (vol. viii, 1910).

ARCHITECTURE

H. VAN BUREN MAGONIGLE

In the initial volume of an annual record of achievement and progress in every field of human endeavor in the United States, the series treating of architecture should justly be prefaced by a brief history of the American Institute of Architects; for the record of American progress in architecture since 1857 and the history of the Institute are practically identical, and its accomplishments in the interests of art, the profession and the public will be found to include most of the important springs of present action and of happy augury for the future.

American Institute of Architects.—Composed of the leading practitioners of the United States, it is consecrated to the advancement of architecture as a fine art and to the maintenance of a high standard of professional practice and ethics, inspired by traditions inherited from a body of twelve men who founded the Institute on Feb. 23, 1857; they were Richard Upjohn, Edward Gardiner, H. W. Cleaveland, Wrey Mould, Leopold Eidlitz, Henry Dudley, Fred A. Petersen, Charles Babcock, Joseph C. Wells, Richard M. Hunt, John Welch, and J. W. Priest. Later they invited to join them Calvert Vaux, John Davis Hatch, John W. Ritch, Frederick C. Withers, Frederick D. Diaper, Joseph Sands, Thomas U. Walter, George Snell, Edward C. Cabot, Alex. J. Davis, William Backus, James Renwick, Jr., R. G. Hatfield, Samuel Warner, Detlef Lienau, Arthur Gilman, Alpheus C. Morse, and Thomas A. Tefft. Richard Upjohn was the first president and his distinguished successors have been, in the order named: Thomas U. Walter, Richard Morris Hunt, Edward H. Kendall, Daniel H. Burnham, George B. Post, Henry Van Brunt, Robert S. Peabody, Charles Follen McKim, William S. Eames, Frank Miles Day, Cass Gilbert, and the present incumbent, Irving K. Pond. Mr. Upjohn served nineteen years; Mr. Walter, ten; Mr. Hunt, three; and the others, through a change in the constitution, two terms of one year each. Through the efforts of these men and those associated with them in the government of the Institute, the canons of professional practice and ethics have been steadily maintained and strengthened, and their influence has spread not only among those practitioners who are not enrolled in its membership but has reached the public, with a corresponding increase in the respect and confidence with which architects are regarded; and a profession that was barely recognized as such at the time of the Institute's foundation now has a definite standing and authority in all matters touching on the arts of design that is growing rapidly stronger and wider. Its devotion to the establishment of architecture as a fine art in the minds of the public, on the dignified plane it occupies in older and more broadly cultivated communities, has been crowned with a large measure of success and the laity is gradually being educated to look upon architects as artists and executives rather than as a slightly better sort of carpenter.

Public Buildings.—Progress was suspended during the Civil War, and in the early years was necessarily slow; but since 1893 the Institute's services to the public and to art have been many and of far-reaching effect. In that year, after repeated efforts initiated in 1874, the Institute secured the passage of the Tarsney Act by Congress providing that under certain conditions the Secretary of the Treasury may avail himself of the services of the ablest architects through competition for governmental buildings; theretofore the design of such structures had been in the hands of the supervising architect of the Treasury Department, a functionary who had not always been adequately endowed by nature or training for this important post. The first building erected under the provisions of the Act was the New York Custom House, and the rapid improvement in the character of the larger buildings built for Government so inaugurated is directly traceable to the work of the Institute; the vastly improved design of the smaller structures is due to the ability of the present supervising architect. Through its chapters in the several states and cities the Institute has had a constant influence upon the formulation of better building laws throughout the country. The work of the commission for the development of the City of Washington was brought about by its initiative and made fruitful by the unceasing vigilance it exercises to see that the principles laid down by Messrs. Burnham, McKim, St. Gaudens, and Olmsted are followed out in the location of public structures and in the development of the park system of the capital city. This watchful care was also effective in preventing the remodelling of the White House and the extension of the Capitol along lines that would have impaired or destroyed their beauty. And the movement toward civic improvement, now so general in America, may be traced to the interest aroused by the Washington plan.

The Octagon in Washington, used by President Madison as the temporary White House during the War of 1812, has been purchased by subscription among the members of the Institute for their national headquarters, and this beautiful example of early American architecture will be thus preserved for the benefit of future generations.

During the early years of the organization the Institute depended upon the personal influence of its members exerted on the students in their offices for its effect upon architectural education, but it has recently rendered important aid in the establishment, on a permanent basis, of the American Academy in Rome founded by Mr. McKim, and intended to correspond in the scope of its work to the French Academy in the Villa Medici. It has initiated the movement to establish a a national school of fine arts in Washington. Through its committee on education an alliance has been arranged with the Society of Beaux Arts Architects whose work in the field of architectural education has been of incalculable value.

In 1907 the institute voted a gold medal for distinguished achievement in architecture, the first recipient of this honor being Sir Ashton Webb, the noted English architect; in 1909 it was conferred upon Charles Follen McKim. This medal will now be awarded every three years.

Standardization of Fees.—The dignity and efficiency of the profession have been advanced by the adoption of a minimum schedule of charges which is now the recognized standard of proper and reasonable professional fees in the United States, and has been sustained as such by the courts in repeated instances; and by the adoption of a code of ethics that places the practice of architecture on the highest plane. In submitting to the institute a draft of a circular of advice relative to principles of professional practice and canons of ethics, the Board of Directors stated their belief that their adoption by the Institute would be of value as setting forth in words a standard to which all who understand and pursue right professional conduct already conform, although they deal for the most part with ideas so elementary that their statement is quite unnecessary for the reputable and experienced practitioner; experience shows that the standards of the Institute tend to become those of the profession at large, and that their formal presentation helps not merely to unify practice, but to deter the uninstructed or thoughtless from improper conduct.

The Competition Code.—After years of discussion on the subject of competitions, a code has been adopted that is even now having a far-reaching effect upon architectural competitions, safeguarding equally as it does the interests of the architect and of the client. Under its provisions members of the Institute are debarred from participating in any competition of which the terms are not in accordance with certain mandatory conditions. On the other hand, it lays down the principle that " competitions are instituted with the sole purpose of advancing the interests of the owner," and that " it is prejudicial to the interests of the owner that an architect should be admitted as a competitor who cannot in advance establish his competence to design and execute the work," and further declares that " the Institute does not presume to dictate the owner's course in conducting competitions, but aims to assist him by advising the adoption of such methods as experience has proved just and wise." There is every reason to believe that as the existence of the code becomes more and more widely known, persons instituting competitions will more frequently make their programs conform to it, and eventually the improper, unfair or dishonest competition will have become a thing of the past; for it has been amply shown that programs of many competitions which superficially appear to be dishonestly framed are in practically every case the result of ignorance of the proper procedure, and that when the right way is pointed out the individuals in charge quickly recognize and follow it.

National Council of Fine Arts.—The Institute also secured the appointment of a National Council of Fine Arts by executive order of President Roosevelt. This order was revoked by President Taft, and the council established on a permanent basis by Act of Congress as the Commission of Fine Arts. The Commission is charged with general critical supervision of the design and proper location for buildings and other works of art erected or purchased by Government. There has never before been a properly constituted authority to which such matters may be referred; they have been treated in the most haphazard and unrelated fashion by committees of laymen, retired army and naval officers for the most part, who naturally were without artistic training or qualification for their duties.

Thus far then, the principal work of the American Institute of Architects has been to improve the quality of architectural practice and service in this country, to disseminate among the profession at large and the public a right appreciation of high standards of conduct and of art, to influence so far as it may the character of public works of art in architecture, painting and sculpture, to honor those who have attained eminence in the profession and to interest itself in the education of younger men upon whom in the future must fall the duty of carrying on this work. These are the specific lines of duty the Institute, as the dean of all architectural societies in the United States, has laid down.

Society of Beaux Arts Architects.—But in a field so wide there is room for many professional associations to work side by side and find ample exercise along other lines. First among these in the importance of its work is the Society of Beaux Arts Architects, composed of former students in the Ecole des Beaux Arts in Paris, which devotes itself primarily to the cause of architectural education, perpetuating the principles that have made the Ecole the best school of architecture in the world. Ten or fifteen years ago an ambitious student who could not afford a course of instruction in the Mass. Institute of Technology or Columbia College had but meager facilities for learning anything outside the line of his daily work as a draughtsman in an office, and lacked, in such studies as he was able to prosecute in his spare time, the stimuli of competition, of measuring his strength against his fellows and of the interchange of ideas. To-day, thanks to the disinterested labors of the Committee on Education of this society, young men may secure an education in planning and design nearly if not quite equal to that to be had in Paris, at a nominal cost; and by arrangement with the several universities which now have schools of architecture they may, in night courses and university extension lectures, study the mathematics, history, and theory of architecture. The system, based as has been indicated on that of the Ecole des Beaux Arts, is briefly this: certain members by appointment or their own choice are the masters or patrons of ateliers which are supported by the small fees paid by the students; these ateliers are not confined to New York, but are established in many of the principal cities; the patrons give their services gratis in the criticism of the students' work. The Committee on Education issues a certain number of programs in a year at stated intervals, and these problems are worked out, the drawings exhibited, and values given to those meriting them; until a student has earned a certain number of values in one class of problems he is not permitted to take the problems of the next class. The constant incentive and culmination of this work is the competition for the Paris prize, giving the winner a generous sum, at present the annual gift of friends of the society, to be spent in foreign study, especially at the Ecole; it is significant of the high quality of the instruction received and of the standard of work required and done, that the Ministry of Fine Arts admits the holder of the Paris prize to the first class without examination or probation. Prior to the firm establishment of the atelier system of the society, to the architectural schools of the Massachusetts Institute of Technology and Columbia College (as it then was) were added those of the Universities of Harvard, Pennsylvania, Illinois, California, Michigan, and others; in them the instruction in design was given by professors who were not as a rule in active daily practice, and who moreover lacked in many instances the requisite training as well as the breadth of view that the practice of architecture naturally bestows. The superior character of the work of the men in the ateliers who had the benefit of criticism by practicing architects became speedily apparent, and in several schools not only have practitioners been invited to act as instructors, but the work of the department has been made to correspond with that of the Society, and its programs are issued to the students; in some cases students in these schools are permitted to choose their own master and atelier. All this has been accomplished in less than a decade and the profession and the public are laid under a perpetual debt of gratitude to this society.

Architectural League of New York.—The membership of the Architectural League of New York includes both architects and workers in allied arts and crafts. Its most salient function is to hold an annual exhibition of architectural and decorative work which is the chief event in this kind in the country. A brief course of lectures is given during the term of the exhibition and discussions and papers on various topics are arranged for from time to time. The League awards annually, besides other prizes, a gold medal and a silver medal for excellence in design to be won in competition by men under thirty years of age.

T Square Club.—The T Square Club was organized in 1883 with the purpose of stimulating a desire for knowledge of design by means of monthly competitions. The membership includes practicing architects as well as draughtsmen, and it was the aim of its founders that both should participate in these concours. The club has completely justified its existence by fostering a spirit of camaraderie and mutual understanding between the architects and their assistants. An atelier in connection with the work of the Society of Beaux Arts Architects is being successfully conducted, and the annual exhibitions of the club are important factors in the artistic life of Philadelphia. Like the Boston Architectural Club, this organization has club and social features which differentiate its character from the other associations noted here.

Boston Architectural Club. — The founders of the Boston Architectural Club had in view very much the same objects as those which inspired the formation of the T Square Club—mutual help and assistance to students. They proposed also to hold public lectures, entertainments and exhibitions, and to form classes for the education of draughtsmen. These classes, in planning, construction, architectural history, water-color, pen and ink, drawing from life, and French have been of immense value to the draughtsmen of Boston. Recently there has been added an atelier affiliated with the educational system of the Society of Beaux Arts Architects. As an indication of its flourishing condition the club now owns its own house, five stories in height, with large rooms for social purposes and ample accommodations for classes and atelier work.

Architectural League of America.—The Architectural League of America organized ten years ago at a convention composed of delegates from some fifteen architectural clubs and has a large membership; the moving cause here was a desire to coördinate the mutual interests of these clubs in exhibitions and education. It established a circuit of exhibitions of architectural works and inaugurated an interchange of sketch problem programs between its constituent clubs. The chief strength of the League is in the

Middle West, and its influence has been successfully exerted for the establishment of architectural schools in several of the cities in that territory and toward the strengthening of others; it has established a traveling scholarship of $1,000 at Harvard University for foreign travel and study. It is encouraging to note that a policy of coöperation with the Institute has every prospect of being successful.

Colonial Architecture.—Such are some of the agencies that are engaged in the advancement of architecture in America, enlisting the best brains in the profession to-day; no such forces were at work in our brief architectural past; the architect of colonial days and of the period immediately following the Revolution had no such stimulating influences all about him. Working in a new country without the multiplied resources of the modern practitioner in books and photographs, in the results of archæological and scientific research, in school training of the best, the architect of that early time produced architecture that is amazing in its quality and character. Indeed his meagerly furnished arsenal, perhaps, made the problem easier; he simply worked in the style current in his time as artists have always done down to the present day; for in all ages hitherto the whole civilized world has dealt with essentially the same style at the same time with such modifications as climate, national temperament and the materials at hand might induce; Greece gave her art to her colonies; Rome borrowed Greek forms, changed them to suit her more opulent taste and, grafting them upon a new system of construction, imposed the architecture that so resulted upon all nations; out of Roman architecture, by Greece, was born the Byzantine style, and from Byzantine sprang the so-called Romanesque, the parent of Gothic which gave place in turn to the Renaissance, a revival of classic forms arising in Italy and spreading slowly northward through France to England, modifying Gothic buildings at first in detail only and gradually affecting the structural form. The later manifestations of the Renaissance, known as the Georgian period in England and as Louis Seize in France, were the immediate sources from which drank the architect or inspired carpenter in the colonies of England in America. Brick and stone were hard to get, forests abounded and architectural detail was accordingly modified with rare taste and judgment for execution in wood. In the richer colonies of Maryland and Virginia, brick and marble were imported and the early architecture of these states is at once genial and dignified. Upon close analysis one may see how the materials at hand governed local character as the country grew and its natural resources were developed; cost was always to be reckoned with, but whenever possible the more durable material was used, and we have the brick mansions of Maryland, of Virginia, and of eastern Massachusetts, and the stone houses of Pennsylvania and New Jersey.

Later-Day Architecture.—The period following that which we call for convenience the Colonial is absolutely devoid of interest with the exception of a mistaken revival of Greek forms—mistaken in the sense that frame houses were covered with smooth boards to simulate marble surfaces and adorned with porticoes carefully copied from the books at hand; some of these old columnar fronts nevertheless have a strange charm. A revival of Gothic followed and many sins were committed in that name; the passion that betrays itself in America now and again for reproducing stone forms in wood had an awful recrudescence at this time, and the wooden Gothic church and the hideous "gentleman's villa" began to dot the helpless land. Some good work in stone was done nevertheless, as for example, Trinity Church in New York. But the sixty or seventy years that intervened between the good early work of the last century and the reawakening of taste by training in its closing years are dreary in the last degree. The mass of our tradition had been chiefly English up to 1860 and even as late as 1876; and whatever her other virtues, England has never been preëminent in architecture. During these years, however, men began to turn to France; the influence of her scientific and artistic spirit became rapidly manifest, and the work of Richard M. Hunt, H. H. Richardson, Charles F. McKim, and Stanford White became the strongest factors in molding the thought and taste of the new generation of artists. The time moreover was propitious; the Civil War was over, the country was recovering by leaps and bounds, the railroads were extending and developing the national resources, new industries were springing up and a steady rise in prosperity gave architects more and greater opportunities than they had ever enjoyed in our history. The progress shown by the architecture of the United States in the past thirty years has no parallel in the history of art, and to-day we may justly claim to be on equal terms with France, our only possible modern rival.

What is our future to be? We have passed in feverish haste through so many stages of development and the pace shows no sign of abatement; the architect of to-day is so eclectic, finds it so hard to choose among the architectural treasures of the world brought literally to his office door, with the style of every age under his hand in his ample library, his brain stored with a myriad impressions of foreign travel; embarrassed further by a wealth of new marbles and building stones, new textures, and colors in brick and terra cotta and tile, rare new woods, almost unlimited structural possibilities in steel and concrete, that it is impossible to say where we are tending. Life is no longer the simple thing it was in the days of our forebears; the modest homestead or manorhouse has given place to the palace of the millionaire, the tavern to that wonderfully complicated organism the modern hotel; the office building, the garage, public and private, and a host of other new problems have arisen to be solved and solved almost over night in the hurry and welter of American life. The general excellence of the work done under such conditions is a marvel only to be accounted for by the quick and trained intelligence of the present-day practitioner.

It were well, however, if there were more time to pause and think; but the fashions in architecture change almost as fast as those of the hats of our womenkind; we have passed breathlessly through our Romanesque period, our Colonial revival, Italian Renaissance, Modern French Renaissance, were threatened by Art Nouveau and a touch of Gothic, and just now seem to be swinging back toward the Italian; in the meantime we have had, in Chicago, a severe attack of the Absolutely New and True, and the Pacific slope has been conducting a flirtation with Spain. Boston has been fairly faithful to her rather narrow tradition and has looked on with the horror of a well-bred maiden lady at the ungodly revels of bacchanalian New York where all styles, vulgar and otherwise, meet and riot. Philadelphia has almost forsaken her Quaker dwelling places and has taken refuge in the Elizabethan period.

Out of all this some new thing will surely emerge; the intense individualism fostered by American life will never permit us to sink into a cold scholasticism; and having in a generation traversed the architecture of the world, styles will rest upon us as lightly as the garments of a gentleman, and Style will be born in the United States.

NOTE.—The author is indebted to Messrs. Glenn Brown, Lloyd Warren, Charles Z. Klauder, George C. Newhall, and Albert Kelsey for facts as to the American Institute of Architects, the Society of Beaux Arts Architects, the T Square Club, Boston Architectural Club and the Architectural League of America.

LANDSCAPE ARCHITECTURE

JAMES STURGIS PRAY

The art and profession which its most eminent practitioner in this country, the late Frederick Law Olmsted, called landscape architecture, and which adapts land to *use* with a controlling regard for its *beauty*, has within the last year undergone unusual development. Increased clienteles have increased the call for trained assistants in the offices, and, in consequence, more young men than before are seeking the training necessary to fill the new positions.

The only university now supplying a thorough-going technical training in the subject on a graduate basis, is Harvard, which, several years ago, recognizing landscape architecture as one of the important technical professions, established a separate department of landscape architecture. Cornell has for some time had an excellent undergraduate course, and several others of the larger universities are considering establishing professional courses. It is significant that the demand is for as thoroughly trained men as can be had, and those well trained can command so much better salaries and fees than men of partial training that considerable sacrifices are made in order to take the full graduate course with its much more exacting requirements for the higher professional degree.

The American Society.—Within the year the membership of the American Society of Landscape Architects, despite the adoption of more stringent requirements for admission, has shown a steady increase—an index of a much greater increase in the number of practitioners in the profession at large. The first number has just appeared of a long needed technical magazine, *Landscape Architecture*, which is to serve as the society's official organ, and will maintain a professional standard heretofore not even attempted by any magazine dealing with the subject.

The Playground Movement.—Among important movements within the field steadily waxing in power and accomplishment are the great playground movement, and that for setting apart "for all time" areas of special landscape beauty or historic interest, and treating them in a way to preserve their inherent beauty and interest, while rendering them safely accessible and enjoyable for large numbers.

Current practice includes not only a much larger volume of work than a year ago; but also a greater variety of problems. Not only are large estates and smaller suburban places being carefully laid out with a view to their landscape beauty, but beauty is being demanded in even the small home lot—much the most important problem in the aggregate—and this in the younger as well as the older communities. By far the greater development, however, has taken place in public work, civic and rural, in part the effect of the increased public appreciation that expert judgment and skill in the æsthetic as well as the practical side of such problems has its money value, but also in part the result of a greater public demand for beauty as "its own excuse for being." A recognition of this twofold demand is found in the increasing consideration of the element of beauty in the designs of such engineering problems as the shores of public reservoirs, the elimination of grade crossings, and the many special problems of street design.

New Fields.—The profession has been active also, in the following types of undertaking; the design of small and large parks, village commons, boulevards and parkways, harbor fronts and seaside resorts, river and lake shore improvements, public gardens, athletic fields and playgrounds, and other public open spaces in cities, and civic centers, the placing of important public buildings and monuments, and design of their settings; the treatment of grounds of various public or quasi-public institutions, as hospitals, hotels, schools, colleges and universities, country clubs, railway station grounds, roadsides, factory grounds and the laying out of model industrial villages, real-estate land subdivision schemes, cemeteries, zoölogical parks, amusement parks, artists' colonies, and so on, besides various special problems of landscape forestry and landscape conservation, and the larger problems of city planning and rural improvement.

City Planning.—City planning, but one part of the great field of the landscape architect, has been developing so rapidly that he has been called upon to solve many city problems, not all involving primarily the æsthetic motive as that is commonly understood. Many American cities have already called in expert counsel to aid them in securing a carefully devised plan providing for the eventual reconstruction where necessary of existing portions, and for the city's growth on reasonable and beautiful lines. The time is probably not far distant when every city of importance will have its official landscape architect charged with the planning of its recreation spaces, the adaptation of its street plan to traffic needs, the planning of future additions to the city; and so on, if not with the actual maintenance of the city's fixed properties. (See IX, *Municipal Government.*)

Rural Improvement.—In rural improvement, a broader and more intelligent interest has come to be shown and more time is now likely to be given to the improvement of farmsteads and to the training of men in the agricultural colleges specially for advising in this particular problem. It is being seen that the city problem and the country problem are but different ends of one larger one, and that each must be solved from the more comprehensive point of view. In the city it is in certain ways more difficult to provide and maintain a sound physical basis in the environment for the uplift of our modern unprecedented populations. To this most complex problem where so many great movements and desires of our day meet—the movement for public health through purer air, water, and food, and better housing; the effort to perfect transportation facilities; the craving for an outdoor life; the awakening desire for the maximum of beauty in our surroundings; and so on—the landscape architect is being called to do his share along with the representatives of other professions (including the sanitarian, the architect, the municipal engineer, and the experts in social and political science); and his function in this many-sided problem is coming to be regarded as a fundamental one.

Indeed, the recent growth of the æsthetic conception in outdoor design, and the habit now forming of demanding that all practical human problems affecting the appearance of the outdoor world shall be studied with a view to beauty as well as efficiency and convenience give grounds for confidence in the extensive future development of landscape architecture in this country.

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MUSIC

HERBERT F. PEYSER

The Year's Music.—Like every other year, 1910 has brought the usual quota of productions more or less pretentious of nature. Certain of these have been acclaimed with emphatic favor in certain quarters, but unbiased critical judgment has not shown itself altogether inclined to set the highest valuation upon them. Seekers after novelty worthy of serious consideration can look to Germany for at least one symphony of reputed importance, to France and Italy for a quartet of operas, to England for a violin concerto, and to the United States for a few operas and orchestral pieces. But, as in the majority of cases, the first performances of these took place comparatively late in the year, the difficulty of estimating their intrinsic worth is further increased. In some other instances compositions were completed, though not promised for public representation until the ensuing year. But as considerable information concerning them was forthcoming they may legitimately be included in the record of the year's accomplishments.

Opera in the United States.—Along other than specifically creative lines, 1910 affords several eventful happenings. On the whole the occurrences may be said to have given a significant impetus to the musical advancement of the American people. Foremost among them was undoubtedly the sweeping reformation of operatic conditions which took place in New York City as a consequence of the withdrawal from the operatic impresarioship of Oscar Hammerstein; a reform which furthermore brought about the assurance of permanent opera for Chicago and Philadelphia, in addition to frequent performances in smaller cities.

Financial difficulties due to the relentless spirit of competition between the Metropolitan and Manhattan opera houses were the cause of Mr. Hammerstein's reluctant abdication. Long before the end, the necessity for vast outlays had begun to cripple the weaker institution. As the competition was not confined to New York its ultimate downfall had resolved itself merely into a question of time. There was no effort, on the other hand, to make light of the immense monetary losses sustained by the Metropolitan. Some $40,000 a week were paid out by it for salaries. Thanks to the fierceness of the contest many singers found themselves drawing salaries 500, 600, and in some cases 700 per cent larger than what they had been able to command in Europe. Moreover, the maintenance of the New Theater as a branch of the Metropolitan received scant support on the part of the public, and proved a debilitating drain at a particularly inopportune moment.

An unsuccessful production of Richard Strauss's *Elektra*, in Feb., proved a $30,000 loss to Mr. Hammerstein. He made several endeavors to secure himself by offering to sell his Philadelphia Opera House to his rival, after vainly attempting to induce Philadelphians to furnish him a guarantee against future losses. Then there came rumors of an alliance between the two establishments, and for some time, negotiations were actually carried on between Otto Kahn, of the Metropolitan, and Arthur Hammerstein, son of the Manhattan's impresario. But the scheme came to nothing. Early in April Oscar Hammerstein sailed for Europe, ostensibly to look for new artists and works. On April 28th announcement was made that he had agreed to withdraw from the field of grand opera in America, and that the Metropolitan had purchased for $2,000,000 his rights in the operas, contracts with artists, stock of scenic equipment, and all other operatic appurtenances except the Manhattan Opera House. Out of the majority of these artists, and also a portion of the Metropolitan Company, was created the Chicago Grand Opera Company, having its headquarters at the Auditorium in Chicago, its purpose being to furnish grand opera in that city, and at the close of its season there, in Philadelphia. Performances were also to be given in Milwaukee, St. Paul, St. Louis, and other places. A so-called "working agreement" was formed between the Metropolitan, Chicago, and Boston opera companies, providing for the periodic exchange of artists between them.

Difficulties of a competitive nature were not the only ones which beset the Metropolitan Opera Company during the early part of 1910. The friction in the working of the dual management of Messrs. Gatti-Casazza and Dippel, which had been sufficiently pronounced during the previous year, developed to so acute a degree that decisive action on the part of the directors was found imperative. During the early part of April, therefore, Mr. Dippel was formally disconnected from the Metropolitan and appointed manager of the Chicago organization. Mr. Gatti-Casazza was retained as sole head of the Metropolitan; while Henry Russell, director of the Boston Opera Company, was secured by the New York organization in the capacity of "advisory director," though no steps were taken to make the functions attending this rather equivocal title clear to the public.

While Mr. Hammerstein had, by the terms of the agreement, been debarred from producing what might in any way be characterized as grand opera, he soon determined to devote his Manhattan Opera House to the presentation of comic opera on a scale of lavishness previously unknown to America. The necessary preparations were made during the summer, and on Sept. 20th the house was successfully reopened with an elaborate presentation of *Hans, the Flute Player*, an operetta, with music by the French composer, Louis Ganne.

Operatic novelties brought forward at both the houses during the early part of the year, were neither numerous nor particularly successful. By far the most widely discussed of them was Richard Strauss's *Elektra*, which Mr. Hammerstein gave its first American hearing on the evening of Feb. 1st. Mariette Mazarin, a French soprano, assumed the title rôle, Henriquez de la Fuente conducted, and the text was sung in French. The *première* provoked a degree of critical discussion equaled only by that which had greeted *Salome* in previous years. The work did not retain its hold, however, a fact due to its failure to bear out its much advertised promise of being musically far more complex, and dramatically more sensational than its notorious predecessor. The composer was found to have said little that he had not already said in *Salome*, and the element of sensuality, so pervasive in the latter, had in *Elektra* no substitute sufficiently effective to replace it in the interest of a large number.

The only novelty of the year previous to *Elektra* at the Manhattan, was Massenet's *Grisélidis*, given on Jan. 19th. Though hardly a great work it made some impression.

"The Pipe of Desire."—A highly important event historically, though not artistically, was the performance at the Metropolitan on March 26th of Frederick S. Converse's one-act opera *The Pipe of Desire*. It had been heard semipublicly in the composer's home town, Boston, some time before. The present occasion marked the first appearance of an American opera on the Metropolitan's stage. Much hope had been based on it by well wishers of American composers, and by that large number of persons who have come to advocate the use of English on the operatic stage of this country. Both were disappointed. The opera failed through George Edward Barton's uninteresting libretto, based on Celtic folklore, and through Converse's music, the best thing about which was its colorful scoring. On the other hand the diction of the participating singers—all of whom were Americans—was so defective as to render most of the text unintelligible.

Franchetti's *Germania* was the first Metropolitan novelty of the year, having had its initial rendering on Jan. 22d. Its music revealed scant originality or distinction and its acclaim was cool. Bruneau's *L'Attaque du Moulin*, brought out at the New Theater on Feb. 8th, fared little better.

Symphonic Music.—Foreign symphonic and other instrumental compositions of genuine note heard in the United States during the year were conspicuously scarce. Among them was Sergei Rachmaninoff's *Isle of Death*, a tone poem based on Boecklin's painting of that name. It was given its first New York performance under the composer's own direction at a concert of the Russian Symphony Orchestra on Jan. 27th. As an impressive piece of mood painting it pleased some, but its excessive length and melodic deficiencies militated against its chances of popularity. A fairly clever orchestral suite, *Turandot*, by Ferruccio Busoni, and a tone poem *En Saga*, by the Finnish Sibelius, were also introduced to New York. Neither Boston, Philadelphia, nor Chicago was treated to much of apparently enduring worth.

"Poia."—Some interesting steps were taken in behalf of American composition during the progress of 1910.

Several will doubtless become landmarks in the history of American artistic advancement. Even more significant than the production of the *Pipe of Desire*, was the representation at the Royal Opera House, in Berlin, at the Kaiser's request, of the opera *Poia*, the music by Arthur Nevin, and the libretto, based on an Indian theme, by Randolph Hartley. It was sung April 23d, and was treated with exceptional harshness by the critics. This unfortunate outcome was understood to have been due in larger measure to a protest against what was termed the "Americanization" of the German stage than to the shortcomings of the piece itself, serious as these proved.

Results more gratifying to American pride had been attained by Edgar Stillman-Kelley in the same city some three months earlier, when his new piano quintet was enthusiastically welcomed. Incidental music to Shakespeare's *Macbeth* was another contribution by Mr. Stillman-Kelley to the American list for 1910. While relatively little else by native writers was accorded public hearing during the year, reports from various quarters of the United States gave indication of a steadily increasing creative activity. During Aug. an opera, *Paoletta*, with music by Pietro Floridia, and book by Walter Jones, was given in English in Cincinnati. By the end of the summer it became known that two more operas—*Natoma*, by Victor Herbert, and *The Sacrifice*, by Frederick Converse—had been completed by their composers.

Coincident with these matters was the amazing spread of the movement for the use of the English language on the lyric stage. Efforts to this end are not of recent origin, but during 1910 the scheme gathered greatly increased momentum. Particular enthusiasm for the cause was manifested in those communities wherein the desire for grand opera was just beginning strongly to assert itself, and many of the most noted foreign vocalists volunteered whole-hearted support.

"The Cave Man."—Two musical functions of no mean significance during the course of the year were the MacDowell Festival, held in Peterboro, N. H., Aug. 16th–21st, and at the opposite end of the Continent the presentation of a music drama, *The Cave Man*, by the Bohemian Club of San Francisco, on Aug. 6th, marking the occasion of the club's thirty-second annual "High Jinks" festivity in Redwood Forest, Sonoma County, Cal. An immense gathering, comprising eminent artists, *littérateurs* and musicians, was in attendance. *The Cave Man* was the work of Charles K. Field. Wm. J. McCoy, who had officiated in the same capacity the year before, provided the musical setting. The plot, devised with the picturesque locality of performance in view, dealt with the evolution of primitive man. The music, undertaken by Mr. McCoy at the eleventh hour, was regarded as a creation of undeniable value.

The MacDowell Festival—the first of its kind—had for its object the commemoration of the composer's death, the emphasizing of the excellent work accomplished in Peterboro by the MacDowell Memorial Association, and the stimulation of interest in the MacDowell Choral Society of Peterboro. It consisted of a series of spectacular pageants representing crucial events in the town's history, all of them being carried out to the accompaniment of MacDowell's music, much of which had been especially arranged and orchestrated for the purpose.

Municipal Music.—A potent factor toward the improvement of popular musical taste was the complete reformation of the municipal music system in New York City in the early part of the summer. The city administration greatly increased the appropriation made for the purpose in former years, and appointed Arthur Farwell, composer and critic, as supervisor of music in parks and recreation piers, thus insuring a complete reorganization of musical forces and totally eliminating the cheap and objectionable class of compositions previously considered all-sufficient. Two large orchestras, under Arnold Volpe and Franz Kaltenborn, were secured to play in two points in Central Park twice a week, while thirty-five bands were maintained at various parts of Manhattan, Brooklyn, Staten Island, and the Bronx for nightly concerts during the warm months. The innovation was welcomed with fervor. The programs, while offering a certain amount of popular music of the better type, were largely devoted to standard compositions. Works of such masters as Wagner, Beethoven, Schubert, Grieg, and Tschaikowsky met with a degree of approval that surprised the most sanguine. A striking feature of the innovation was the provision made for weekly performances in Central Park of little known compositions by American composers. Among those whose works were brought forward under these circumstances were Edgar Stillman-Kelley—whose *Macbeth* music thus had its first public production—Arthur Farwell, Henry Hadley, Homer Bartlett, and Wm. J. McCoy.

Gustav Mahler.—The general tendency of European composition in 1910 justified few promises of immortality. Several examples of it, however, call for more than passing mention. The difficulty of "placing" a contemporaneous German work by reports of its reception at its *première* is further enhanced through the pronounced spirit of partisanship prevalent in that country—a condition generally resulting in a degree of over- or undervaluation which only the clear perspective of a year can set aright. In this category is likely to fall the Eighth Symphony of Gustav Mahler, which had its initial hearing in Munich on Sept. 12th. The work, which is described as marking a new departure in the evolution of symphonic form, requires almost two hours in its rendition and enlists the services of one thousand participants. The use of a large chorus and a number of solo singers marks Mamler's advance along lines previously laid down by Beethoven and Liszt. They are not reserved for purposes of emotional climax in the closing movement as in the works of the composers just named, but are closely interwoven with the orchestral fabric throughout. There was actually an inclination on the part of some commentators to classify the thing as a cantata rather than a symphony. The conventional division into four or more movements is disregarded. The work is in two sections, the first, based on the mediæval hymn, *Veni Creator Spiritus*, and the second employing the text of the closing scene of Goethe's *Faust*. Consensus of critical opinion after the first hearing seemed to point to the fact that Mahler had created a work of nobility and beauty despite the hampering element of excessive length.

Strauss.—If the year failed to bring into performance Richard Strauss's latest effort—a comic opera, *Der Rosenkavalier*—the world was nevertheless kept fully informed as to its progress. According to Strauss's own statements, the music was conceived in a far different style from that with which his name has always been associated, its characteristics being rather those of Viennese operetta. The plot of the opera, which was devised by Hugo von Hoffmannsthal, is of no great originality, treating as it does of an old and wealthy noble who woos by proxy, only to lose his intended bride to the substitute. The characteristics of the music were said to be simplicity of instrumentation, and a predominance of waltz rhythms as thematic material, the *pièce de résistance* being a Viennese waltz at the close of the second act. A private hearing was given some parts of the score in Sept., with Strauss at the piano. Of it the critic, August Spanuth, wrote that "people were astonished as they listened to this waltz entirely without distinction. . . . Was this really our Richard Strauss?"

Some stir was created during the spring in Germany by the writings of Erich Korngold, the thirteen-year-old son of a Viennese music critic. These included a pantomime, *Der Schneeman*, a set of variations entitled *Don Quixote*, and a piano sonata. The boy's efforts earned him the hearty compliments of Richard Strauss, by whom he showed himself to have been strongly influenced in respect of thematic character, scheme of dissonance, and modulation.

Music festivals were more numerous than ever before during the summer of 1910. For the first time one of these was devoted to Richard

Strauss, and held in München. From a financial standpoint it failed disastrously. Still another novel one was held in Dortmund for the benefit of the prolific Max Reger. This composer's chief additions to his lengthy opus list during the year included a piano concerto, a string quartet, and a *chaconne* for violin. Worthy of record, also, is the second symphony of Hugo Kaun, which found favor when played early in the year at the Leipsic Gewandhaus.

France and Italy.—Music in France underwent few striking developments in 1910. In March was produced a new opera, *Don Quixote*, by Massenet at the Monte Carlo Opera. It was well received. Camille Saint-Saëns also completed an opera, *Déjanire*, a three-act amplification of his incidental music composed for an open-air performance at Béziers of Louis Gallet's play. Comparative inactivity marked the members of the Neo-French school.

The two foremost achievements of Italy during the year were works of Giacomo Puccini and Pietro Mascagni —the operas, *The Girl of the Golden West* (whose premier production was given in New York) and *Ysobel*, respectively.

England. — England, like America, witnessed an improvement in the status of native composers during the year. For this much credit is due Thomas Beecham, whose activities as operatic impresario caused him to be regarded as a dangerous rival to Covent Garden. He was highly successful in presenting standard and ultra modern works, many of them in English, and some by English composers. During the summer Oscar Hammerstein, too, determined to establish an opera house in London.

Heading the list of British instrumental composition was Edward Elgar's violin concerto.

In March, 1910, died Carl Reinecke, the composer, and Edouard Colonne, the conductor; during May, the aged singer, Pauline Viardot-Garcia.

ARCHÆOLOGY

WILLIAM NICKERSON BATES

Classical Archæology.—The year is notable for the inauguration of two important projects by classical archæologists in the United States, the plan to excavate Cyrene by the Archæological Institute of America and the excavation of Sardis by Princeton University. The work projected by the Institute is in a region as yet hardly touched by the spade, and the selection of Cyrene itself rather than of some other site in Cyrenaica was determined upon only after careful exploration. The Turkish Government has granted the necessary *firman*. The excavation of Sardis will undoubtedly add greatly to our knowledge of the relations between Greece and the East. Both projects will require a long time to complete.

Crete.—During the year R. B. Seager has continued his excavations in Crete, discovering the cemetery of Gournia which yielded many crania of the periods known as Middle Minoan III (ca. 1850–1600 B.C.), and Late Minoan I (ca. 1600–1500 B.C.). He has also published (*Transactions*, University of Pennsylvania Museum III) the results of his work on the Island of Pseira, Crete, in 1907. The settlement extended from Early Minoan II to Late Minoan I, or from about 2500 to 1500 B.C., but lay in ruins during Middle Minoan II (ca. 2000–1850 B.C.). The excavation of the town resulted in the discovery of some fine specimens of early Cretan pottery of the Late Minoan period.

Corinth and Athens.—The American School of Classical Studies at Athens continued its excavations at Corinth, in the vicinity of the fountain of Pirene. In Athens W. B. Dinsmore made important discoveries on the Propylæa (*American Journal of Archæology*, xiv, 1910), and B. H. Hill on the Earlier Parthenon, thus continuing the tradition established by G. P. Stevens with his discoveries on the Erechtheum, and H. D. Wood on the Propylæa. Mr. Dinsmore also definitely settled the site of the choregic monument of Nicias.

Delos and Sparta.—Reports of the work of English, French, German, Italian, and Greek archæologists in 1909 are now available and make important additions to our knowledge of antiquity. At Delos, the sanctuary at the foot of the Cynthian hill, the Cabirium, the houses lying to the south of the Agora, the building near the temple of Apollo, and remains on the western side of the island were excavated. At Sparta, the English are continuing the work of clearing the most important parts of the town. They have now proved that Sparta possessed an art of its own previous to the fifth century B.C., and that the so-called Cyrenaic vases are really Spartan.

Colonus.—The most interesting discoveries of the Greek Archæological Society have been at Colonus where the "chasm," the altar of Poseidon, and the Plutoneum were found exactly as described by Sophocles. From these discoveries it was possible to locate the Academy and the road leading from Athens to the Academy along which were the tombs of famous men. The work of the Society in restoring the Propylæa at Athens also advanced.

In Italy.—In Italy excavation has gone on in many places including Pompeii, where a pre-Roman necropolis was found. In Rome a fine piece of fortification wall over 100 feet long and with an average height of ten feet was found on the site of the Villa Spithoever. It is earlier than the so-called Servian wall. Excavations were continued in the Forum, and at Locri Epizephyrii, where large numbers of interesting terra-cotta tablets were found in previous years.

Further portions of the cargo of the ancient ship found off Mahdia, Tunis, have been recovered and prove that it sailed from Piræus laden with works of art in the first century B.C.

Bibliography.—The most important publication of the year (fall of 1909) was *Scripta Minoa*, vol. i, by A. J. Evans. This is the first publication on the inscribed tablets from Cnossus. The writer makes it probable that the Phœnician alphabet, and incidentally our own, was derived from the Cretan script. Another important publication is Fowler and Wheeler's *Greek Archæology*, which, while purporting to be a manual, is really a complete exposition of the whole subject. (See also *Epigraphy*.)

EPIGRAPHY

HARRY L. WILSON

The study of Greek and Latin epigraphy is pursued in America under obvious disadvantages, the chief of which is distance from classical sites and from the great museums of Europe. In spite of these disadvantages, American scholars have made substantial contributions to knowledge in this field. Their activity has had its cause and inspiration in three facts: namely, the frequent visits of American students and professors to Greece and Italy, often including residence in the American Schools at Athens and in Rome, the archæological expeditions sent out by Cornell, Harvard, and Princeton, which yielded a large number of new inscriptions, and the acquisition of considerable collections of stones by several of the universities, notably by Johns Hopkins, Michigan, Harvard, and Columbia.

Greek Inscriptions.—The work of American epigraphists during the year 1910 includes some discoveries of real importance, the publication of many new inscriptions, and the discussion of some which were already known. In the *American Journal of Archæology*, xiv, 1910, Prof. Nathaniel Schmidt published twenty-four Greek inscriptions from the Negeb, of which the most interesting is one from Beersheba inscribed in verse in praise of one Antipater. More numerous and important are the Greek and Latin inscriptions of Syria, now being brought out in parts by Littmann and Prentice. This work is a part of the publication of the second Princeton archæological expedition (1904–5), and forms a sequel to the elaborate volume of the same title issued two years ago by Prof. Prentice as the epigraphic result of the first Princeton expedition. In the *American Journal of Philology*, xxxi, 1910, Prof. Robinson published some new Greek inscriptions recently gathered by him in Attica, Achæa, and Lydia, one of which gives another example of the rather rare Achæan dialect. He will also edit the new Greek inscriptions from the American excavation of Sardis, of which more than twenty have so far come to light. The most valuable is the inscription on the cella wall of the so-called Temple of Cybele, which definitely fixes the attribution of the Temple to Artemis. For further detail see the report in *American Journal of Archæology*, 1910, No. 4.

At Athens, in the spring of the year, an important discovery was made by a young American scholar, Dr. Allan C. Johnson, who found inscribed stones in a mediæval wall on the Acropolis. Three new attic decrees of the fourth century B.C. were recovered at first, and the number grew to sixteen when the wall was torn down.

Latin Inscriptions.—On the Latin side also the year has seen several discussions and publications of interest. To Dr. J. A. Tolman we owe a study of the sepulchral inscriptions in Bücheler's *Carmina Epigraphica Latina* (Chicago Dissertation) which considers the form, character, composition, and content of these metrical inscriptions, and to Prof. E. W. Fay some interesting notes on Pompeian inscriptions reading from right to left (*American Journal of Philology*, xxxi). Unpublished Latin inscriptions, too, have been edited by various scholars. In the *Johns Hopkins University Circular*, No. 6, Mr. Fox made a preliminary report of five lead curse tablets which contain words and forms hitherto unattested and make a valuable addition of about 225 lines to the literature of malediction. Dr. Magoffin, also, in the *American Journal of Archæology*, xiv, 1910, published forty-five new inscriptions from Latium and added a large number of corrections to the C. I. L., xiv, and Dr. H. H. Armstrong wrote briefly on inscriptions from Privernum discovered by him in the course of his studies at Piperno (*American Journal of Archæology*, xiv, 1910). Finally in the *American Journal of Philology*, xxxi, 1910, Prof. Wilson continued his discussion of the Latin inscriptions at the Johns Hopkins University, adding about twenty-five inscriptions chiefly from Rome. Most of these have not before been published, a few have been published inaccurately, and almost all contain interesting features. Prof. Wilson also made a preliminary report on an unpublished epigraphical manuscript from Spain, which will add something to our knowledge of the inscriptions of Cáceres and its vicinity. (See *American Journal of Archæology*, xiv, 1910.)

AMERICAN ARCHÆOLOGY

EDGAR L. HEWETT

The Cliff Palace.—The past few years have witnessed a marked quickening of popular interest in the study of American archæology, resulting in a corresponding activity among scientific institutions. During the current year this increased activity has been manifested by the number of archæological expeditions in the field. The Smithsonian Institution, representing the United States Government, has just completed the excavation and repair of Cliff Palace and Spruce Tree House, two of the most important cliff dwellings in the Mesa Verde National Park, in Southwestern Colorado. This work has been in charge of Dr. J. Walter Fewkes, of the Bureau of American Ethnology, under whose direction these ruins have been cleared of débris, and put in condition to teach a valuable lesson to the traveling public.

Mexican Archæology.—The Mexican Government, under the direction of Señor Don Leopoldo Batres, Inspector General of Archæological Monuments for that Republic, has continued its archæological operations at San Juan Teotihuacan, near Mexico City. This work, when completed, will have uncovered one of the largest centers of primitive population in the Western hemisphere.

Guatemala and Honduras.—During the winter months, the Archæological Institute of America, through its School of American Archæology, the headquarters at Santa Fé, N. M., sent an expedition to the Southern Maya region in Guatemala and Honduras, in charge of the director of the school. Copan and Quirigua, the two largest of the Southern Maya cities, were visited, and the inscriptions studied and photographed, and arrangements made for the opening next year of an extensive archæological project, which is to continue for a term of years.

New Mexico.—The same institution, in collaboration with the Bureau of American Ethnology, commenced in June an ethnographic survey of the Rio Grande Valley, in N. M., which will include within its scope, not only excavation, surveying, and mapping, but also correlated studies in the phenomena of cognate branches such as ethnology, physiography, geology, zoölogy, and botany in their relation to the ancient cultures of that region. This work has been under the joint direction of the director of the school, and F. W. Hodge, ethnologist-in-charge, of the Bureau of American Ethnology. During the fall months the school also excavated Balcony House, one of the largest cliff dwellings in the Mesa Verde National Park.

South America.—This year has also marked the return of the Peabody Museum of American Archæology and Ethnology of Harvard University, to the field of the Maya Culture, to our knowledge of which it has made invaluable contributions in former years. Dr. Alfred Tozzer conducted an expedition to the Central Maya field, visiting sites in Northern Guatemala and British Honduras, in which latter place excavations were made. The same institution has recently brought to a close a three years' expedition in South America, during which time the headwaters of the Amazon River were explored, and ethnological collections secured from this little known region.

Among the activities of independent students of American archæology, worthy of special note, may be mentioned Clarence B. Moore's mound excavations in the Southern States, and the publication by Charles P. Bowditch, of the results of many years' study of the hieroglyphic inscriptions left by the ancient Mayas of Central America, in a noteworthy work entitled *The Numeration, Calendar System, and Astronomical Knowledge of the Mayas.*

Bibliography. — The leading journals, devoted either in whole or in part to American archæology, are *The American Journal of Archæology* and *The American Anthropologist.* These magazines appear quarterly, and present articles of current interest to the science; book reviews, archæological notes, and items. A periodical of a more popular character, dealing in part with American archæology, is *The Records of the Past.* Several scientific institutions and universities issue, from time to time, publications dealing with different subjects of the science, among which are the *Annual Reports* and *Bulletins of the Bureau of American Ethnology;* the publications of the National Museum of Mexico; the Papers of the School of American Archæology; the Memoirs and Papers of the Peabody Museum of American Archæology and Ethnology, and the occasional archæological papers of other institutions and private individuals.

XXXII. LITERATURE AND LANGUAGE

ANCIENT LITERATURE AND PHILOLOGY

ANCIENT LITERATURE

(Additions from Papyri)

CLIFFORD H. MOCRE

The recovery of Aristotle's ***Constitution of Athens*** from an Egyptian papyrus some twenty years ago opened a new period in which the additions made to extant Greek literature by the discoveries of new papyri have been so constant that scholars have come to expect that each year will bring something new and valuable. The past twelve month has not disappointed that expectation, for the seventh volume of the *Oxyrhynchus Papyri* (London, 1910), contains much that is welcome. The papyri published date from the late second to the sixth century of our era. They give us considerable fragments of the *Aetia* and *Iambi* of the Alexandrian poet Callimachus, fairly extensive fragments of a prose treatise on literary composition, portions of the Μισούμενος of the comic poet Menander, a bit from an unknown historical work, and a complete Ἐγκώμιον Ἑρμοῦ. All this is new, as in a certain sense is a small fragment of the Greek version of the apocalyptic work called the sixth book of Ezra, of which the Latin text only has hitherto been known. The present discovery may give support for the view that the work originated in Egypt. Of works already extant we have some verses from Genesis ii and iii in the Greek version, parts of the first Epistle to the Corinthians, vii–viii, and some verses from the Epistle to the Philippians, iii–iv. Two fragments of Plato's *Phædrus*, one from Xenophon's *Cyropædia*, i, 6, and one from Chariton's romance of *Chæreas and Callirhoë* complete the list.

Of all these the most important are the fragments from the works of Callimachus and the portion of a play of Menander. The former are contained on two leaves which once belonged to a papyrus book. The portion of the *Aetia* recovered from the first leaf amounts to ninety verses, the greater part of which is occupied with the story of Acontius and Cydippe. We also learn that the poet drew this story from Xenomedes, the historian of Ceos in the early fifth century, who has thus been made something more than a name to us; and in fact, Callimachus devotes nineteen verses of this fragment to a summary of Xenomedes's mythical history. The second leaf contains the epilogue to the *Aetia* and some 450 verses of the *Iambi*, of which unhappily a large part are damaged past certain and complete restoration. Enough, however, is preserved to give us the story of Bathycles's cup, adjudged to Thales as the wisest of men, and a tale of the reversal of nature in the reign of Cronos, including a quarrel between the olive tree and the laurel. Although the fragment of Menander's Μισούμενος—*The Hated Man*—are but scanty, yet the large portions of his comedies recovered during the last few years make every additional find doubly welcome.

The considerable fragments of the anonymous prose treatise on literary composition found on papyrus of the third century, but composed between A.D. 50 and 200, present a variety of subjects: the characteristics of Lysias, observations on systems of ethics, omission of names and suppression of facts in various prose writers, criticism of the orators for belittling the achievements of Philip, censure of the diction of Xenophon, and a collection of Atticisms. The historical fragment on papyrus of the third century describes a battle which is as yet unidentified. Finally the encomium on Hermes in twenty-two verses is a rather mediocre effusion, apparently of the second century of our era.

While these are the chief literary finds made known during the past year it should be noted that there has been published a large number of new rescripts, documents, and letters, which add to our knowledge of the nonliterary Greek language in the imperial period and of social and governmental matters in Egypt. Unhappily no papyri containing Latin writings have been recovered.

Among the recent publications of literary works made known in former years must be named Grenfell and Hunt's *Hellenica Oxyrhynchia* (London, 1909), that historical work which was first published by them in *The Oxyrhynchus Papyri,* Vol. V. The authorship of this is confidently claimed for Theopompus by Eduard Meyer in an interesting book *Theopomps Hellenika* (Halle, 1909), but the original editors still hesitate between Theopompus and Cratippus. The fragments of Menander, old and new, have been edited by A. Korte: *Menandrea ex papyris et membranis vetustissimis,* ed. maior (Leipsic, 1910), ed. minor (*ibid.*); and the fragments of the *Hero*, *Epitrepontes, Periceiromene*, and *Samia* have been provided with introductions, explanatory and critical notes, and a bibliography by Edward Capps in an edition which deserves the warmest praise (Boston, 1910).

Finally may be named the useful collections by George Milligan, *Selections from the Greek Papyris,* University Press, Cambridge, 1910, which offers fifty-five selected texts covering over nine centuries; few can be called literary, but they throw light on the language and history of the period they cover.

SEMITIC PHILOLOGY

MORRIS JASTROW

Within the general field of Semitic philology the completion of Prof. Carl Brockelmann's *Grundriss der vergleichenden Grammatik der Semitischen Sprachen* (Berlin, Reuther and Reichard, 1908–10) merits first mention as a comprehensive work embodying the present state of knowledge by an acknowledged master of the entire field of Semitic philology. After a survey of the character and literature of each one of the Semitic languages and dialects, the phonology is taken up in detail and with equal exhaustiveness, the noun and verb formations and the particles. The division adopted for the Semitic languages is that into east and west, with a further subdivision of the western Semitic languages into northwest Semitic, comprising Canaanitic and Aramaic, and southwest Semitic, covering Arabic and Abyssinian. Babylonian-Assyrian (which is preferable to Brockelmann's Assyrian-Babylonian) is the representative of the eastern Semitic branch, and is significant as the first to branch off definitely from the common trunk. Brockelmann inclines strongly towards including Egyptian in the Semitic group, and also believes in a grade of relationship between the Semitic and Hamitic languages. The attempts to discover a relationship between the Semitic and the Indo-Germanic group have led to no results. Indications point to Arabia as the original home of the Semites, though this, too, is a problem that has not yet been definitely solved.

In Prof. Max L. Margolis' Grammar of the Aramaic idiom of the Babylonian Talmud (German and English editions, Munich, C. H. Beck, 1910) we have the first thoroughly scientific study of the language of the great compilation of Talmudical Judaism. Based on a study of the manuscript material, the grammatical forms are set forth with an application of that exact philological method which is in the main the gift of German scholarship. The work is an important contribution also to the comparative study of Semitic speech.

The *Encyclopædia of Islam* (German, French, and English) under the general editorship of Prof. Houtsma, of the University of Utrecht, and with the coöperation of a large body of scholars, is progressing very slowly, only six parts having appeared since 1908. When completed it will form a vast storehouse of facts, covering the entire scope of Islamism, historical, geographical, biographical, literary, artistic, legal, and theological.

On the other hand, the publication of the great biographical encyclopædia of Ibn Sa'ad, with sketches of all notable persons in the history of Islamism down to the year 230 of the Hegira—i. e., to the tenth century A.D., is proceeding rapidly under the direction of Prof. Ed. Sachau, of the University of Berlin (Brill, Leiden). Eight volumes of this important mine of valuable historical material have now appeared.

The large archive of clay tablets found in 1906–07, at Boghâz-Köi, by Prof. Hugo Winckler, of the University of Berlin, still awaits publication, but in the meanwhile Winckler has communicated some preliminary results (Die Arier in den Urkunden von Boghâz-Köi in the *Orientalistische Literaturzeitung*, July, 1910) in which he furnishes some specimen translations of the tablets, all bearing, as he believes, on the prominent position occupied in the Hittite Empire by the Aryan population. The thesis rests upon a very doubtful comparison of a term *mariana*, occurring in these tablets with the Vedic *marya*, used in the sense of "heroes." Fortunately the proof for Aryan settlements in central Asia Minor as early as circa 1500 B.C. is independent of such hazardous conjectures. Winckler, himself, furnished a more substantial one by his discovery that the names of Vedic deities, like Varuna and Mitra, occur in the tablets of Boghâz-Köi. Pending the publication of the tablets from which the solution of the Hittite problem may be expected, we have in Prof. John Garstang's *Land of the Hittites* (New York, Dutton, 1910) an admirable survey of explanations and discoveries with a summary of all that we can at present gather from the story of the monuments and inscriptions.

The first volume of L. W. King's *History of Babylonia and Assyria* (London, Chatto & Windus, 1910) covers the earliest period down to the foundation of the Babylonian monarchy circa 2000 B.C. The material for this period is still too scanty to permit of writing a continuous history, but what we have is well utilized by the author, who adds to the value of his work by plans and illustrations and a good map, besides archæological discussions of deep interest. In an important appendix, Mr. King reviews the bearings of the results of the two expeditions of Pumpelly, in 1903–04, to the transcaspian province of Russian Turkestan on the origin of the Sumerians—the non-Semitic settlers of the Euphrates Valley. While not pronouncing a definite opinion, Mr. King inclines to the belief that further explorations will strengthen the view of Pumpelly that the central Asian oasis represents the fountainhead of western Asiatic culture and that the Sumerians may have come from this region.

Besides marking a reaction against the Pan-Babylonistic thesis of German scholars who would interpret the entire culture of antiquity in terms of an astral-mythology that had its origin in the Euphrates Valley, Prof. A. T. Clay's *Amurru, the Home of the Northern Semites* (Phila. S. S. Times, 1910), pleads for an early migration of "Amorites" from northern Syria to Babylonia, and sees pronounced "Amoritish" influences in the early Babylonian pantheon and in myths that have hitherto been supposed to have originated in Babylonia, and from there traveled to the western branches of the Semites, including the Hebrews. The thesis is as novel as it is learnedly and ingeniously worked out, though meager philological evidence is often pushed beyond due bounds.

The *International Critical Commentary* (New York, Scribner's) series has been brought nearer to completion by the addition of *Genesis* by Prof. John Skinner, and *Chronicles* by Prof. Edward L. Curtis, both of which maintain the high standard of thoroughness and completeness from the philological and exegetical point of view that has made the volumes of the series standard authorities recognized as such in Europe as well as this country. About one half of the Old Testament series has now been issued.

INDO-GERMANIC PHILOLOGY

(Exclusive of the Germanic Languages)

ROLAND G. KENT

The past few years have been an era of convenient handbooks, containing usually grammar and texts, of comparative grammars of a set of related languages, and of etymological dictionaries; works embodying in concise form the latest results in the field. The most recent are the following:

GEIGER, W.—Elementarbuch des Sanskrit. Heidelberg, Winter, 1910.

GELDNER, K. F.—Der Rigveda in Auswahl, vol. ii (Stuttgart, Kohlhammer, 1909); a commentary to those hymns to which vol. i (1907) forms a glossary.

REICHELT, H.—Awestisches Elementarbuch. Heidelberg, Winter, 1909.

LESKIEN, A.—Grammatik der altbulgarischen Sprache. Heidelberg, Winter, 1909.

BERNEKER, E. — Slavisches etymologisches Wörterbuch. Heidelberg, Winter; part 5 has appeared.

PEDERSEN, H.—Vergleichende Grammatik der keltischen Sprachen, vol. i. Einleitung und Lautlehre. Göttingen, Vanderhoek, 1909.

THURNEYSEN, R.—Handbuch des Altirischen. Heidelberg, Winter, 1909.

BOISACQ, E.—Dictionnaire étymologique de la langue grecque. Heidelberg, Winter, and Paris, Klincksieck. Part v has appeared.

THUMB, A.—Handbuch der griechischen Dialekte. Heidelberg, Winter, 1909.

WALDE, A.—Lateinisches etymologisches Wörterbuch, Ed. 2. Heidelberg, Winter, 1910.

Other convenient handbooks appear below under the names of C. D. Buck and H. C. Tolman.

Karl W. Hiersemann, of Leipsic, acquired in 1909 a collection of 1,294 Sanskrit manuscripts on palm leaves, written mainly in South Indian alphabets, and including a great variety of texts. At latest advices they had not found a purchaser.

American Contributions.—The recent contributions of American scholars include the following:[1]

INDO-IRANIAN.—C. R. Lanman (Harvard) has completed and edited the late W. D. Whitney's (Yale) translation of and commentary on the *Atharva-veda Sainhitā* (Cambridge, 1905, vols. vii–viii in *Harvard Oriental Series*, edited by C. R. Lanman).

M. Bloomfield (Johns Hopkins) has presented *The Religion of the Veda* (New York, Putnam, 1908) in the *American Lectures on the History of Religions.* His *Vedic Concordance* (Cambridge, 1906, vol. x in *Harvard Oriental Series*) is to be supplemented by a work on the Vedic variants. (See Bloomfield, *JAOS.*, 29, 286–298; and also Michelson, *JAOS.*, 29, 284–285.)

A. V. W. Jackson (Columbia), in his *Persia Past and Present* (New York, Macmillan, 1906), described his travels and researches amid the scenes of Zoroaster's life, and his examination of the cruces in the old Persian inscription of Darius at Behistan. In the *Columbia Indo-Iranian Series,* edited by Jackson, there have recently appeared, vol. v, *Sayings of Buddha, the Iti-vuttaka,* by J. H. Moore, 1908; vol. vi, *Nyaishes or Zoroastrian Litanies,* by M. N. Dhalla, 1908; vol. vii, *Dasarupa, a Treatise on Hindu Dramaturgy,* by G. C. O. Haas, 1910.

H. C. Tolman (Vanderbilt) has issued in the *Vanderbilt Oriental Series* (edited by himself and J. H. Stevenson), an *Ancient Persian Lexicon and Texts* (Nashville, 1908), and a *Cuneiform Supplement* with an *Index Verborum* by E. L. Johnson (Nashville, 1910). These are decidedly the most usable editions of the old Persian inscriptions; the former volume contains the transliterated texts with translation and lexicon, and the latter contains a grammar, a facsimile of the texts, and a concordance. Tolman's note in *AJP.*, 31, 80, if his restoration of the inscription *Darius NRb* be correct, shows conclusively that Darius was a Zoroastrian.

F. Edgerton (Johns Hopkins) has a convincing treatment of the *Origin and Development of Elliptic Dual and Dvandva Compounds* in *KZ.*, 43,

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[1] The author uses the following abbreviations in this text: *AJP., American Journal of Philology; CP., Classical Philology; CQ., Classical Quarterly; IF., Indogermanische Forschungen; JAOS., Journal of the American Oriental Society; KZ., Zeitschrift für vergleichenden Sprachforschung, begründet von A. Kuhn.*

110–120, and some etymological notes in *IF.*, 24, 291–293.

T. Michelson has written upon the Indian dialects seen in the inscriptions of Asoka's Fourteen Edicts, and seeks to prove that their dialects are not directly descended from classical Sanskrit: *IF.*, 23, 127–131, 219–271, 24. 52–55, 27, 194–195, 296; *KZ.*, 43, 351; *AJP.*, 30, 183–187, 284–297, 416–429, 31. 55–65; *CP.*, 5, 219–220; *JAOS.*, 30, 77–93.

E. W. Burlingame, in *Buddhaghosa's Dhammapada Commentary* (*Proc. Amer. Acad. of Arts and Sciences*, 45, 467–550), gives the titles of the stories, an index to them, and summaries of the first four books.

In *IF.*, 25 and 26, issued as a *Festschrift für Karl Brugmann*, there are four contributions by American scholars: A. V. W. Jackson, *Indo-Iranian Notes*, 25, 177–184; M. Bloomfield, *On Some Disguised Forms of Sanskrit Paçu Cattle*, 25, 185–199; C. D. Buck (Chicago), *Greek Notes*, 25, 257–263; E. W. Fay (Texas), *αἷμων and imāgo*, 26, 27–42.

Miss W. W. Wilson, *The Soma Offering in a Fragment of Alcman*, *AJP.*, 30, 188–195; E. A. Weldin, *Rigveda, 1, 32, 8*, *AJP.*, 31, 329–330; J. E. Abbott, *Indian Inscriptions on the Fire Temple at Bāku*, *JAOS.*, 29, 299–304.

GREEK AND LATIN.—C. D. Buck's excellent *Grammar of Oscan and Umbrian* (Boston, Ginn, 1904) has been translated with slight omissions into German by E. Prokosch (Wisconsin) under the title *Elementarbuch der oskisch-umbrischen Dialekte* (Heidelberg, Winter, 1905). Buck's *Greek Dialects* (Boston, Ginn, 1910) is also a splendid manual, not identical in method with Thumb's *Handbuch* (see above). Buck is now supervising a series of *Studies in Greek Noun Formation* (*Introduction* by Buck in *CP.*, 5, 323–325), based on collections begun by the late A. W. Stratton, and since extended; the first portion, that on *Labial Terminations* (*CP.*, 5, 326–356), is by E. H. Sturtevant (Barnard), and marks a great advance over previous work.

The late M. Warren (Harvard) offers a brilliant interpretation and restoration of *The Stele Inscription in the Roman Forum*, in *AJP.*, 28, 249–272, 373–400.

E. W. Fay, in *Synthesis Doliolorum Dresseliana* (*AJP.*, 30, 121–138), gives an extremely ingenious interpretation of the Duenos inscription as a humorous archaizing product of a grammarian between the time of Lucilius and that of Quintilian.

Greek and Latin etymologies are discussed by M. Bloomfield in *AJP.*, 29, 78–81 (*πρέσβυς*); by F. A. Wood (Chicago) in *CP.*, 3, 74–86 (*μωέν*, *maneō*, *febris*, *melior*, *tempus*, etc.), 5, 303–308; by E. W. Fay in *KZ.*, 41, 208 (*κραιπάλη*, *crāpula*); 42, 86; 42, 382, and 43, 120 (*-ter* of prepositions and adverbs, *cumulus*, *clēmēns*); 43, 154–160 (*premit*, *gerit*, *atrōx*, etc.); *IF.*, 26, 27–42; *CQ.*, 3, 272–278 (*mīles*, etc.); 4, 80–90 (*annus*, etc.); *CP.*, 4, 301–310 (*mēd*, *tēd*); by C. D. Buck in *IF.*, 25, 257–263 (*ἑστίā*, etc.); by E. H. Sturtevant in *CQ.*, 3, 8–12 (*dīs*, *mīs*, etc.); *CP.*, 3, 435–440.

A. R. Anderson (Princeton) continues his valuable studies in the language of Plautus by *The Use of the Œ Diphthong in Plautus*, in *CP.*, 4, 291–300.

F. F. Abbott (Princeton) treats *Vulgar Latin in the Ars Consentii de Barbarismis* in *CP.*, 4, 233–47.

LATIN LITERATURE

Charles Knapp

Within the last eighteen months the most important contributions to the study of Latin literature have been made abroad. Foremost is J. W. Duff's *A Literary History of Rome* (London, Unwin Brothers, 1909), an admirable account of Roman literature from the beginnings to the end of the Golden Age, which emphasizes the Roman elements in Latin literature and the originality of the Romans. A review of the book, itself a contribution to the subject, is by K. F. Smith in *American Journal of Philology*, 31.

Less valuable, because less sure in its general grasp, but very suggestive often in details and important since it is the sole book in English devoted to the theme, is H. E. Butler's *Post-Augustan Poetry* (Oxford, Clarendon Press, 1909), dealing with the poets from Seneca the Younger through

Martial and Juvenal. Valuable, too, is F. Plessis's *La Poésie Latine* (Paris, Klincksieck, 1909), a thorough study of Latin poetry from Andronicus to Namatianus, also well reviewed by K. F. Smith, *American Journal of Philology*, 30.

Two of the three volumes of a fine work, *Einleitung in die Altertumswissenschaft*, consisting of papers by various scholars, edited by A. Gercke and E. Norden (Leipsic, Teubner, 1910), have appeared; they contain important articles on Roman meter, literature, religion, and philosophy.

In America most of the work in the field is published in periodicals rather than in book form. Among books the first place is held by C. U. Clark's definitive edition of the text of *Ammianus Marcellinus*, a most elaborate work (Vol. I, Berlin, Weidmann, 1910). We may name also M. H. Morgan's *Addresses and Essays* (New York, American Book Co., 1910), the larger and more important part of which deals with Vitruvius. Much less weighty is F. F. Abbott's *Society and Politics in Ancient Rome*, in which, on the basis of the inscriptions, some light is thrown on matters connected with Latin literature. Finally, a notable article of general interest is P. Shorey's *The Case for the Classics* (Chicago, *The School Review*, 18), especially valuable for bibliographical matter relating to the assault on the classics and the defense.

Volumes of classical studies published by various universities (e. g., California, Columbia, Cornell, Harvard, Michigan, Nevada) contain matters relating to the study of Latin literature, though often on recondite topics of narrow appeal. The *Transactions of the American Philological Association* for 1909 also contains matter of interest to the student of Latin literature.

The *American Journal of Philology*, 31 (Baltimore), and *Classical Philology*, 5 (Chicago), contain various articles within our field. Only a few can be named here. From the former journal we notice E. W. Fay, review of G. Friedrich's *Catulli Veronensis Liber* (Leipsic, Teubner, 1908); A. G. Harkness, *The Final Monosyllable in Latin Prose and Poetry*, which seeks to deduce from the examples cited inferences concerning the influence of accent on verse structure; M. B. Ogle, *Laurel in Ancient Religion and Folk-Lore*, a collection of examples bearing on the theme from both Greek and Latin authors, with comment thereon; E. G. Sihler, *Serviana*, an attempt to set forth something concerning Servius's personality and to discuss him anew as grammarian and rhetorician; R. B. Steele, *Relative Temporal Statements in Latin*, which sets up a new theory of the origin of the subjunctive *cum*-clause (deriving it from Oratio Obliqua), of interest to the student of literature as well as to the grammarian. In *Classical Philology* the articles are even more technical, commonly, and of narrower appeal. J. S. Phillimore, assuming, without proof, that the poem called Culex is by Vergil, proceeds to emend consistently to produce a text which shall show the technical proficiency we expect from Vergil, even in his earliest days, a strangely subjective procedure; E. K. Rand writes on *Early Mediæval Commentaries on Terence* (the concluding pages discuss also the growth of the knowledge of Terence in the Middle Ages); A. L. Wheeler writes on *Propertius as Præceptor Amoris* and *Erotic Teaching in Roman Elegy* (the papers tend to weaken belief in the indebtedness of the Roman elegiac poets to Alexandrian influences). Of a more minute sort are papers on the text of *Livy*, by F. W. Shipley; on that of *Pliny*, by E. T. Merrill and F. E. Robbins; on that of *Catullus*, by B. Ullman.

CLASSICAL PHILOLOGY

Paul Shorey

This is not a subject in which we may expect the annual announcement of startling discoveries, nor are American scholars as yet producing epoch-making books. But the development of graduate studies in the past twenty-five years has trained a generation of scholars whose total productivity is creditable to the present and of great promise for the future. Belletristic writers sometimes disparage this work as narrow and technical in its scope, and contrast it invidiously with the comprehensive erudition of Germany or the literary charm of the best French and English essays on classical themes. The work of ambitious professional scholars is naturally in large part technical, but the charge of narrowness is undeserved. In the lack of libraries and other equipment, much of our older scholarship was necessarily limited to special linguistic and syntactical research. But the influence of the new university ideals and of the Archæological Institute with its schools at Athens and Rome, has brought about a change. Specialism with its motto *divide et impera* has taken all knowledge for its province—and to-day nearly every branch and subdivision of philological, archæological, antiquarian, historical, literary inquiry is represented, if not with distinction, at least with credit by some American scholar. This great step in advance is often overlooked in current journalistic censure of American classicism. But a glance at the tables of contents of American philological journals or at the reviews published in *Classical Philology* in the past five years will show that it is a fact.

Periodical Literature. — This increased productivity has been facilitated and fostered by enlarged opportunities for publication. In addition to the *Transactions* of the American Philological Association, and the pioneer *American Journal of Philology,* still brilliantly edited by its founder, Prof. Gildersleeve, we have the *American Journal of Archæology; Classical Philology,* published by the University of Chicago; the *Classical Journal* of the Classical Association of the Middle West and South in coöperation with the Classical Association of New England; the *Classical Weekly,* the organ of the Classical Association of the Middle States; the *Harvard Studies,* now in their twenty-first volume; the *Cornell Studies,* of which the nineteenth volume has just been issued; the *Transactions* of the Connecticut Academy of Arts and Sciences (New Haven), and the *Proceedings* of the American Academy of Arts and Sciences (Boston), which have recently admitted papers on classical themes. Nor is this all. Leading institutions now require the printing of doctoral dissertations and provide an appropriation for the "studies" of the classical departments. Such studies are now published by the universities of Michigan, Wisconsin, Pennsylvania, Illinois, California, Nebraska, Colorado, Nevada, Cincinnati, and many others. Lastly a great deal of unnoticed good work goes into the editing of the various classical series of school and college texts, of which every self-respecting publisher has one.

Much of this productivity is doubtless still amateurish and crude. But it is by no means so futile as the public has been taught to believe. The average doctoral dissertation issued by the larger universities is, to say the least, quite equal to the normal German standard. Good points and genuine if minor contributions to knowledge are frequently made in the "studies" of places whose names a few years ago suggested anything but scholarly associations.

Text-books.—The text-book translated from or based upon a German edition, is being rapidly superseded by works that bear witness to painstaking study and independent scholarship, and when the bigger and better books are ripe the publishers will find place for them in or out of their "series," as they have already found place for such works as the late Prof. Seymour's *Life in the Homeric Age;* for Prof. D'Ooge's *Acropolis,* and for Prof. and Mrs. Allinson's *Greek Life and Letters.*

This general sketch, which seemed necessary as an introduction to the first of these annual reviews, leaves space only for a brief bibliography of the most significant work of the past year in the field of Greek studies. Much of the work, it will be observed, is in the form of journal articles and studies, and doubtless some omitted articles are quite as worthy of inclusion as those here mentioned.

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METHODS OF INSTRUCTION IN LATIN AND GREEK

Gonzalez Lodge

The Curriculum.—The most important advance during the year in the teaching of Latin has been in the matter of curriculum. At the meeting of the American Philological Association, in Dec., 1909, the commission on college-entrance requirements provided for by the association at its former meeting, made a report in which it suggested revolutionary changes in the high-school curriculum. Up to this time there had been a great variety in the specific requirements of the different colleges, though the majority had agreed in requiring four books of Cæsar, six orations of Cicero, and six books of Vergil's Æneid. The commission recommended that the schools should read not less *in amount* than they had done before, but that the emphasis should be laid upon sight translation rather than upon prepared work. In the examination, it recommended that the prepared work should be restricted to two speeches of Cicero and two books of Vergil, and that there should also be examinations in sight reading, which should be of equal value with those in the prepared work, and failure in which should involve failure in the prepared work. The commission also recommended that much greater stress be laid upon oral work, but particularly in the first year. These recommendations have been adopted already by most of the important Eastern colleges, and the State and city of New York have revised their syllabi to harmonize with them. The report has been discussed with considerable detail, especially by the chairman of the commission, Prof. J. C. Kirtland.[1]

The Secondary Schools.—Dr. Ernst Riess[2] has discussed the high-school curriculum from the point of view of the teacher in the public schools, emphasizing the need of more flexible work and less specific demands. Dr. Riess urges that more stress be laid from the beginning upon: translation from English into Latin, mainly at hearing; the acquisition and constant employment of a limited vocabulary. Dr. H. T. Archibald[3] has given detailed suggestions as to the best methods of handling vocabulary from day to day in both Latin and Greek.

Prof. Julius Sachs[4] pleads for an improved standard in the teaching of Latin in the secondary schools with regard first, to training in linguistic power, and second, to the recognition of the vital relation between the content of Roman life and literature and our own literary and practical development. Mr. H. L. Millner[5] makes a comparison between the position of Latin in English and in American schools, to the discredit of the latter, and urges that American schools be given greater flexibility in teaching.

Oral Teaching. — Interest in oral teaching has been much stimulated not only by the report of the commission alluded to above, but by the accounts of the work done in English schools, especially the Perse School, Cambridge, that have been brought back by visiting American teachers. At the last meeting of the National Education Association in July oral teaching was the subject of a Round Table discussion. A report[6] of the work of the Perse School has just been issued by the English board of education. This contains not only a detailed exposition of the method pursued, but also specimens of the work of the individual pupil. It is evident that the conditions in this school are very different from those that prevail in American schools, but much profit can be gained by American teachers from the experiment now being made in this school.

Prose composition has been treated by Profs. J. Elmore,[7] W. S. Gordis,[8] and W. G. Hale.[9] Prof. Elmore urges that, while vocabulary should be limited to the words in common use in the authors read, the material of the exercises should be drawn from within the range of the pupil's experience. Prof. Gordis declares that the *pari-passu* method of treating syntax is the most effective, but there should be coördination of similar, or opposite, constructions by the teacher. Prof. Hale finds that the composition books of the last forty years are all full of faults and unpractical. He urges a shorter book, so arranged that reading and writing go hand in hand in such a way that no construction is used before being taken up, and that it shall be taken up when first reached in reading; further, that constructions should be treated organically.

There has been no serious discussion of the authors read beyond a few papers on Vergil.[10]

Prof. H. F. Allen,[11] in a defense of Greek culture, deprecates strongly the idea that the effect of Greek authors can be gained through translation, or that modern languages have an educational value equal to that of Greek. He meets the criticism that students of Greek cannot read Greek when they leave college, by demanding better methods of teaching, and urges particularly the method pursued in teaching modern languages. There has been little discussion of Greek methods. In addition to Dr. Archibald's article, there is a suggestive paper by Prof. G. A. Williams,[12] setting forth the method he has pursued for twenty years.

Suggestions for stimulating the interest of students are provided in articles by Prof. H. M. Kingery,[13] Miss G. L. Eaton,[14] and Prof. D. P. Lockwood.[15] The production of classical plays[16] is becoming more and more common.

Classics and the New Education.—The symposia of the Michigan Schoolmasters' Club have been continued in a valuable series of studies on the classics and the new education. Prof. E. K. Rand[17] sketches the part played by the classics in the education from the classical period through the dark ages down to the present time, and notes a progressive lowering of the esteem in which they are held, due at the present day to romanticism, materialism, and the breaking down of authority of all kinds. Prof. R. M. Wenley[18] maintains that the classics are classical because in them, as concerns the intellect, we find the secret of eternal life. They enable the average man to realize the winsomeness of literature and art, and also reveal the essentials for which man has ever struggled, will ever struggle. Taught with proper emphasis and recognition of the need of the average student, they will come to their own again. Prof. Paul Shorey[19] summarizes the discussion of the last twenty years, showing that classicists have won a victory at the bar of educated opinion, however slight may be its practical significance. He shows further that classical education is a universal phenomenon of civilization, that higher nonvocational education has always been largely literary and linguistic based on a literature distinctly not ephemeral. For us that literature must continue to be the classics. While it would be too much to expect that all undergraduates should know much classics, it is monstrous that they should not know any.

Latin remains a necessity in anything but an elementary or purely technical education. Greek is not a necessity, but the first of luxuries. In the light of experience no judicious adviser can refuse to "give the horse a chance at the ancient springs" before concluding that he will not drink.

Of great interest to American teachers is a special report[20] of the English board of education on the teaching of classics in the secondary schools of Germany. This gives the results of the investigations of three well-known English scholars into German classical teaching, and forms an excellent supplement to the report of the work in the Perse school.

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11. The Case of Greek Again. Educational Review, 39.
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13. Latin Literature in the Secondary Schools. Classical Weekly, iii, 42–4.
14. A Classical Room. Classical Journal, v, 212–3.
15. Widening toward the Past. Classical Journal, 360–4.
16. Hains, D. D.—Greek Plays in America. Classical Journal, vi, 24–39.
17. The Classics and European Education. School Review, xviii, 441–59.

18. The Classics and the Elective System. School Review, xviii, 513–29. See also Prof. E. G. SIHLER on The Elective System in the New York Evening Post, Oct. 1, 1910.

19. The Case for the Classics. School Review, xviii, 585–617.

20. Special Reports on Educational Subjects, vol. xx. London, 1910.

MODERN LANGUAGE AND PHILOLOGY

GERMANIC LANGUAGES

DANIEL B. SHUMWAY

Gothic.—The year 1910 has been characterized by great activity in the domain of Germanic languages and literatures. At the close of 1909 a most important addition to our knowledge of Gothic was made, the discovery by P. Glaue and K. Helm, two professors of the University of Giessen, of a new Gothic manuscript, a papyrus fragment of two pages, which came from a village near the ruins of ancient Antinoë in Egypt. It contained a portion of Wulfila's Bible translation of the Gospel of Luke with the corresponding passage in Latin. The discovery is important because it serves to corroborate the belief that there formerly existed bilingual codices of the Bible in Latin and Gothic, such as we find in the small fragment, the *Codex Carolinus* at Wolfenbüttel, and possibly in the original of which the *Brescian Codex* is a copy, and which F. C. Burkitt (*Journal of Theological Studies*, 1899) conjectured to be a copy of a bilingual codex with the Gothic omitted. A facsimile of the fragment with a discussion of the text has been published in E. Preuschen's *Zeitschrift für die neutestamentliche Wissenschaft*, vol. ii, pp. 1–38. This year has also seen the publication of the seventh edition of Braune's well-known *Gotische Grammatik*, of a new and enlarged edition of Streitberg's *Gotisches Elementarbuch*, and a new edition of Wright's handy little *Gothic Grammar*. Finally, Streitberg's admirable edition of the Gothic Bible, with the Greek text on which it is based, has just been completed by the appearance of the second part, containing a Gothic-Greek-German vocabulary.

Middle High German.—In the domain of Middle High German we have a new critical reprint by Fried. Pfaff of the great Heidelberg *Liederbuch*, the most famous of the collections of German *Minnesong*, the first volume of which has thus far appeared. A new translation of the famous epic, the *Nibelungenlied*, into rhythmical prose by Prof. D. B. Shumway, has been published by Houghton Mifflin and quite favorably received; prose having been chosen to make the translation more accurate and literal than is possible with verse. In the period of early New High German the critical Weimar edition of Luther's complete works is being continued, the last volume to appear being the thirty-seventh. A Yale dissertation by Paul Curts discusses Luther's *Variations in Sentence Arrangement from the Modern Literary Usage*, showing that they mostly resemble loose colloquial usages of to-day rather than the strict literary usage.

Modern German.—In modern German literature the unabated interest in Goethe is shown by the appearance of no less than three new critical editions of his works, the one, a selection in six volumes, edited by Erich Schmidt at the request of the Goethe Society. The second is an edition of his complete writings (*Propyläenausgabe*) in forty volumes, of which the first four have appeared. The third is likewise a complete edition in forty parts (*Goldene Klassiker Bibliothek*) and is based on the Hempel edition. There also appeared a jubilee edition of Goethe's *Faust*, containing all the versions of the poem extant (*Urfaust*, *Fragment*, etc.). At first issued in an expensive subscription edition soon exhausted, it has now been republished in a more moderately priced one. The reception of Goethe's *Faust* in England in the first half of the nineteenth century has been made the subject of an excellent study by W. T. Hanhart (*Columbia University Germanic Studies*). The attitude of the youthful Goethe toward the public forms the subject of an able dissertation by W. R. R. Pinger (*Der*

Junge Goethe und das Publikum, University of California Publications) in which he successfully controverts the widespread belief that Goethe was a despiser of the public.

A new popular edition of Schiller, based on the old Hempel edition, has appeared in Berlin (*Goldene Klassiker Bibliothek*). A third edition of Erich Schmidt's monumental biography of Lessing has been issued, and this fall an American edition of Lessing's *Laokoon*, together with Goethe's essay on the statue and Herder's review of Lessing's work, has been published by G. W. G. Howard, of Harvard (Holt & Co.). The introduction contains an admirable essay on Lessing's problems and on the influences under which he wrote. It is almost too long for the purpose, however, and the fact that many parts of the text are omitted, will not cause it to supersede the handy edition of Hamann and Upcott.

A new edition of Arnim and Brentano's *Knaben Wunderhorn* is appearing in Leipsic, and in this country Rob. M. Wernaer has made an excellent and comprehensive study of the *Romantic School in Germany*. Kluge has published the tenth edition of his well-known Etymological Dictionary, R. M. Meyer, the fourth edition of his admirable *History of German Literature in the Nineteenth Century*, and Vogt and Koch have issued an enlarged edition of their *Geschichte der deutschen Literatur* (two volumes, Leipsic). Here in America Geo. M. Priest, of Princeton, has worked over Klee's *Grundzüge der deutschen Literatur* into an excellent and very readable handbook, entitled *A Brief History of German Literature* (Scribner's). Klara Hechtenberg Collitz has prepared a very judiciously selected anthology, entitled *Selections from Early German Literature* (American Book Co.), based on modern German translations. It supplements Calvin Thomas's *Anthology* of the preceding year, as it includes extracts from Gothic and Old Norse, but cannot take its place, as Thomas has brought his selections down to Goethe and Schiller, whereas the former ends with the *Minnesingers*.

German Archives.—An interest in German archives as sources of American history has been growing for some time and has resulted in the Carnegie Institute's sending Prof. M. D. Learned, of the University of Pennsylvania, to Germany for the purpose of investigating the official archives as to the material they contain. This was found to be so abundant that it has led to the establishment of the *Institute of German-American Research* for the publication of the many important documents discovered.. Prof. Learned's report has, however, not yet been made public. The series of the American Germanica has been increased by an excellent treatment of *Schwenkfelder Hymnology* and the sources of the first Schwenkfelder hymn book printed in America by A. A. Seipt, until recently one of the editors of the *Corpus Schwenkfeldianorum*, a monumental edition of Schwenkfeld's writings, and by a detailed study of early German music in Philadelphia by Robt. R. Drummond, in which he shows the important part played by the Germans in the early history of this community.

Scientific Periodicals.—The various American journals devoted to the interests of modern languages and philology, the *Publications of the Modern Language Association*, the *Journal of German and English Philology, Modern Philology*, the *German-American Annals*, and the *Modern Language Notes* have been appearing regularly. The *Journal* contained a stimulating article by Prof. Curme on the *Best German Pronunciation*, and one by Emil C. Winter on the *Relation of Schiller to Post-Kantian Idealism. The Publications of the Modern Language Association* contain an article by John C. Ransmeier, showing the close connection between Uhland's *Fortunat und seine Söhne*, and a Parisian version of 1770 to which Uhland had access when studying in Paris, 1810–11. Prof. Calvin Thomas has contributed an interesting article, *The Landsmaal Movement in Norway*, showing the progress that the mother tongue is making there against the domination of the literary idiom, which is essentially Danish in character. Prof. Ernst Voss continues his studies in the literature of the sixteenth century by a reprint of *Der Lutherisch Pfaffennarr,* and Prof. Hoskins has added to his studies in literary criticism with an article entitled *The Place and Function of a Standard in a Genetic Theory,* in which he shows, among other things, that there is no fixed standard of form, but that it varies from age to age, and that, on the whole, changes in art and literature are not the cause, but the result of economic, political, and religious transformations.

Two noteworthy Chicago dissertations are *A Study of Grillparzer's Attitude Toward Romanticism,* by E. J. Williamson, and *A Study of the Technique of K. F. Meyer's Novellen,* by M. L. Taylor, the latter setting forth the inner connection between the external form and Meyer's conception of the characters. The philosophical side of Goethe is discussed in conjunction with Dante and Lucretius by G. Santayana in his *Three Philosophical Poets* (Harvard University Studies in Comparative Literature), and Sudermann's art is briefly treated by Prof. Phelps in his recent book on *Modern Novelists.* Witkowski's brilliant though brief sketch of the *German Drama,* which achieved such instant success in Germany, has been ably translated into English by L. E. Horning (Holt & Co.), and bids fair to become one of the standard handbooks on the subject. Lessing and Schiller are discussed by C. W. Elliott in his work on *The Continental Drama* and *Ibsen and His Plays* form the subject of a short article by the well-known dramatic critic, Archibald Henderson (*Bookman* for July, 1910). A new translation of Heine's poems by F. K. Ball appeared last year, and a chatty article, *In the Footprints of Heine,* by H. J. Forman, in the Sept. number of the *Bookman.* That Americans are gradually becoming interested in German literature is shown by the fact that a number of translations of German authors have appeared. In addition to Heine's poems, Hauptmann's gloomy tragedy, *Fuhrmann Henschel,* has been translated by M. A. Redlich, and Wildenbruch's charming tale, *Das edle Blut,* by W. O. Lowe, under the title *Story of Cadet Life.* Seidel's little classic, *Leberecht Hühnchen,* has been translated by Jane H. White under the title, *A German Christmas Eve.* Tales by Baumbach and Volkmann have been rendered into English by Ruth G. Schottenfels as *Meadow Sprite and Other Tales of Modern Germany.* The devotional songs of Novalis (Fried. Hardenberg) have also appeared in German and English.

The publication of new school editions of German classics and of German grammars and composition books goes on unabated, but the mere enumeration of their names would take us beyond the limit of this article. The following authors, however, have been edited for the first time: the writings of the German patriot Arndt, by Wm. A. Colwell (Heath & Co.); Annette Droste-Hülshoff's interesting story, *Die Judenbuche,* by Ernst Eckelmann (American Book Co.); further excellent editions of Grillparzer's historical drama, *König Ottaker's Glück und Ende,* by Prof. Eggert, of Michigan; of Otto Ludwig's powerful drama, *Der Erbförster,* by M. C. Stewart, of Harvard; and of Gutzkow's famous play, *Uriel Acosta,* by Profs. Cutting and Noé, of Chicago (all three, Holt & Co.).

German-Americans.—The following books deal with various aspects of German-American life and culture: George von Skal, one time editor of the *New Yorker Staatszeitung* and the author of a well-known book on the American people, treats the history of *German Immigration in the United States,* and sketches the lives of successful German-Americans in an exhaustive study. H. Richards, *The Pennsylvania German in the Revolutionary War,* shows how actively the German elements helped in this great struggle, a part that has never been adequately acknowledged in American histories. H. Winston has sketched the history of the old historical Eagle Schoolhouse Tredyffrin in Chester County and given a chronological list of the German settlers. In this connection mention should be made of A. B. Faust's scholarly work in two large volumes, *The German Element in the United States;* it treats the early German immigration and the influence of German elements in our civilization in such a masterly way that it won the prize above several competitors, and has been called by one of its recent critics "almost monumental."

Selma Lagerlöf. — Passing on to other Germanic languages we find that the interest aroused in Selma Lagerlöf, the Swedish novelist, by her receiving the Nobel prize for literature, is reflected in the appearance of translations of a number of her works. Her quaint and fascinating story *Gösta Berling*, for which she received the prize, and which deals with the curious and romantic adventures of the cavaliers of old Sweden in an inimitable fashion, has been issued in the tenth edition. Further, her *Girl from the Marsh Croft*, a volume of tales, and her charming children's book, *The Wonderful Adventures of Nils*, have been well rendered into English by Velma S. Howard. Her personality is described by Edwin Björkman in the *Review of Reviews*, Jan., 1910.

Swedish Literature.—Tegnér's poetic romance, *Axel*, has again been translated into English by Magnus Bernhard, and the *Education of the Child*, by Ellen Key, the well-known Swedish advocate of woman's rights, has been reprinted from her larger work, *The Century of the Child*. *Swedish Folk Dances* form the subject of a work by Nils W. Berquist. Three volumes of humorous sketches by Alfred Hedenstjerna (*Matmors Friare*, *Stina i Hornary*, and *Tösabiten pa Grönvik*, and an anthology of Swedish verse (*Poetiskt album ur svenska sanger*) by K. Warburg have been issued in Swedish by the publishing firm Engberg and Holmberg. Two volumes of historical sketches dealing with the sixteenth and seventeenth centuries by the Swedish-Finnish novelist, Zacharias Topelius, *Hertiginnan af Finland* (Duchesses of Finland) and *Ungdomsdrömmar* (Dreams of Youth) have also appeared in the original.

Norwegian Literature.—Taking up the subject of Norwegian literature, we find that the recent death of the great Norwegian poet and novelist, Björnsen, has given rise to a number of articles dealing with him and his works. Thus he has been the subject of sketches by Björkman in *Review of Reviews*, April, 1910, by Max Nordau in the *Bookman*, and by L. C. Wilson in the *North American Review*. Ibsen's tragedy *On the Heights* (Paa vidderne) and his lyric ballads have been translated by W. N. Guthrie. H. Hermannsson, of Cornell, has published a bibliography of the *Sagas of the Kings of Norway and Related Tales*, and G. T. Zoega has prepared a *Concise Dictionary of Old Icelandic* (Oxford Press). On the cultural side Prof. Geo. T. Flom has written a *History of Norwegian Immigration to the United States from the Earliest Beginnings Down to the Year 1848*.

Dutch Literature.—Dutch literature comes in for almost no consideration, the only article on the subject being one by A. S. Van Westrum, *Modern Dutch Literature* in the *Bookman*, Jan., 1910. The author shows how little Dutch literature has been influenced by the movements of other continental literatures. The plays of Heyermann, however, form an exception to this, his *Ship of Good Hope* and *The Ghetto* being modern problem plays and successfully produced both in English and German. In the domain of novels practically the only ones translated into English are three by Louis Couperus, *Eline Vere*, *Footsteps of Fate*, and *Majesty*, and one by Fred. van Eeden entitled *The Quest*. Recently, however, a powerful realistic novel, *Toil of Men*, by Querido, has been published here in an English version.

ROMANCE LANGUAGES

Prof. W. W. Comfort, Cornell University, supplies without accompanying text the following bibliography of the recent important literature of the romance languages:

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GENERAL TOPICS

COPYRIGHT

William W. Appleton

In the United States.—The copyright act now in force went into effect July 1, 1909 and differs materially from previous acts.

The author has the exclusive right to print, publish, translate, dramatize, arrange and adapt, and to deliver or authorize the delivery of the copyrighted work as a lecture, sermon, or address in public for profit. The dramatic author has exclusive right to perform or exhibit in any manner or method, in whole or in part. Works of art are included, models and designs, reproductions of art work, drawings, and plastic works of a scientific or technical character, photographs, prints, and pictorial illustrations. The musical composer has the exclusive right to perform the copyrighted work for profit, to set it in any system of notation or any form of record in which the thought of an author may be recorded and from which it may be read or reproduced. If the composer permits mechanical reproduction, other mechanical reproducers may use the work on payment to author of two cents for each part manufactured. Manufacturers shall furnish, if required by copyright proprietors, on the 20th of each month the number of parts manufactured during previous month, and royalties shall be due on the 20th of the next succeeding month.

Any person entitled to copyright may secure copyright for his work by publication thereof with notice of copyright affixed to each copy, as required by the act. Two copies of work shall be promptly deposited in the copyright office at Washington. If not promptly deposited, the register of copyrights may demand deposit, which must be made within three months from any part of the United States, except an outlying territorial possession of the United States, and within six months from such territory or from any foreign country, in default of which the copyright shall become void.

Copyright shall extend to an author or proprietor, a citizen or subject of a foreign state, only when the alien author or proprietor is domiciled in the United States at the time of first publication, or when the foreign state or nation of which the author or proprietor is a citizen or subject grants by treaty or otherwise to citizens of the United States copyright on substantially the same basis as to its own citizens. The existence of reciprocal conditions are to be determined by the President of the United States by proclamation made from time to time. The President's proclamation of April 9, 1910, included Austria, Belgium, France, Germany, Great Britain and possessions, Italy, Mexico, the Netherlands and possessions, Norway, Portugal, Spain, Switzerland, Chile, Costa Rica, Cuba, Denmark, and Luxemburg was added on June 29, 1910.

Duration.—Duration of copyright is for twenty-eight years from publication, with a renewal term of a further twenty-eight years. The application for renewal of copyright must be made at the copyright office within one year prior to the expiration of the original term of copyright. The copyright of periodical, cyclopedic, and other composite works can be renewed by the proprietor, but all other copyrighted work must be renewed by the author, or by the widow, widower, or children if the author is not living, and in case none of these are living, by the author's executor or next of kin.

Manufacturing Clause. — Books to secure copyright must be manufactured in the United States, except books for the blind, books of foreign language and origin, and English books seeking an *ad interim* protection. In order to give English authors time to arrange for publication in the United States, books in English published abroad may secure an *ad interim* copyright by a deposit of one copy of the foreign edition within thirty days after first foreign publication, and thirty days additional after such deposit are granted, within which the publication of the American edition must take place in order to extend the publication.

Great Britain.—A bill to amend and consolidate the law relating to copyright was introduced in the House of Commons by Mr. Buxton, president of the board of trade, July 26, 1910. The bill, if passed, will replace many existing statutes and amend and extend existing laws.

It extends the period of copyright to the lifetime of author and fifty years thereafter, in line with the recommendation of the Berlin convention. For a cyclopedic or composite work the term for the work as a whole is fifty years. The interests of the public have been safeguarded from the possible perversity of an author's representatives after his death. In case they should withhold a work from publication or place an unreasonable price upon it, or, in case of a drama, ask a prohibitive sum for the right to perform, any one can apply to the comptroller general of patents for a license, and that official will be authorized to adjudicate on the matter, duly respecting the right of royalties.

Copyright means the sole right to produce or reproduce the work or any substantial part thereof in any material form whatsoever, or in any language; to perform, or in the case of a lecture, to deliver, the work or any substantial part thereof in public; and shall include the sole right (*a*) in the case of a dramatic work to convert it into a novel or nondramatic work; (*b*) in the case of a novel or other nondramatic work to convert it into a dramatic work; (*c*) in the case of a literary, dramatic, or musical work, to make any record, perforated roll, or other contrivance by means of which the work may be mechanically performed.

Dramatic work includes any piece for recitation, choreographic work or entertainment in dumb show the scenic arrangement or acting form of which is fixed in writing or otherwise, and any cinematograph production where the arrangement or action form or the combination of incidents represented give the work an original character.

Artistic work includes works of painting, drawing, sculpture and artistic craftsmanship, and architectural works of art and engravings and photographs.

The act permits, at the request and risk of the copyright owner, seizure of pirated editions, the arrest of hawkers or the search of premises without notice or formality. Registration is not compulsory.

Any work to secure copyright must be first published in His Majesty's dominions, but may be published simultaneously in some other place, and shall be deemed to be published simultaneously if the time between the publication in one country and the publication in the other country does not exceed fourteen days.

Turkey.—A complete copyright bill was passed on May 8, 1910, in which copyright is given for a term of the life of the author and thirty years after his death.

South America.—At a meeting of the Pan-American Union, held at Buenos Ayres, the text of the convention on the rights of literary and artistic property was approved Aug. 11, 1910, to be submitted to the various countries represented.

The Argentine.—In Sept. a copyright law was approved by both Argentine chambers, and promulgated by a presidential decree Sept. 23 1910. Under this law scientific, literary, and artistic property is recognized for all works published or edited in the Argentine Republic. The term of copyright is for the lifetime of the author and ten years after his death. In posthumous works the term is twenty years after publication. In Article X it is provided that works published in foreign countries, whatever may be the nationality of the author, are protected if the country of origin has an international convention, or has made special agreement with the Argentine Republic.

The International Copyright Union.—The Conference for the formation of this Union was held first at Berne, Switzerland, in 1886, and met again at Paris in 1896 and at Berlin in 1908. The members of the union are, Germany with protectorates, Belgium, Denmark, Spain and colonies, France with Algeria and colonies, Great Britain, colonies and possessions, Haiti, Italy, Japan, Liberia, Luxemburg, Monaco, Norway, Sweden, Switzerland, Tunis.

At Berlin a new convention of thirty articles was agreed upon, to be ratified not later than July 1, 1910. In case the states did not notify the Berlin convention, they are bound by the text of the former conventions. Belgium, Germany, Haiti, Liberia, Luxemburg, Monaco, Spain, and Switzerland have adopted the Berlin text without reservation; France with a reservation as to works of applied art; Japan with a reservation as to the exclusive right of translation and the public performance of music, and with a reservation as to works of architecture and newspaper articles, and the retroactivity of the provisions of the Berne convention.

The Berlin convention proposed a new basis of international union by guaranteeing to the author of any one of the countries of the union publishing for the first time in any one country copyright in all other countries of the union. This protection is not subject to any formalities whatever, and is declared independent of the existence of copyright in the author's work in his own country. Furthermore, the Berlin convention provides that authors outside of the jurisdiction of any of the countries of the union, publishing for the first time in one of these countries, may enjoy the same rights as national authors. The Berlin convention extended the subject matter of copyright to include works of architecture, pantomimes, when these are fixed in writing, cinematograph productions of an original character, and the reproduction of music by means of mechanical instruments. The Berlin convention proposed a general term of copyright during the life of the author, and fifty years after his death.

It is unfortunate that the United States cannot become a member of the International Union. As long as the United States requires domestic manufacture, or makes copyright depend upon compliance with other formalities, its legislation is not in accordance with the principles of the convention.

SIMPLIFIED SPELLING

CHARLES P. G. SCOTT

At the request of the author, the following contribution on the progress of the movement for the simplified spelling of the English language is printed in accordance with the official recommendations thus far made by the Simplified Spelling Board.

The Simplified Spelling Board.—The Simplified Spelling Board was establisht in Jan., 1906, by a number of philologists and literary men and men of affairs, who thought the time had come to make a concerted attempt to regulate and simplify the spelling of the English language. The movement was the outcome of the previous attempts of these men and their predecessors, in the American Philological Association, in the Philological Society of London, and in other societies concernd with literature and education, to bring about a greater regularity in English spelling. In May, 1905, eleven of these men organized themselvs into a committee, and secured from a number of men prominent in literature a promis to use a given number of simplified forms. The list of words was that adopted in 1908 by the National Education Association, namely—*program, catalog, decalog, prolog, demagog, pedagog, tho, altho, thoro, thorofare, thru, thruout.* Over 100 literary men and educators signd this agreement, and the list of signers was soon greatly extended, including teachers and professional persons thruout the United States. Upon this encouragement the committee of eleven receivd a promis from Mr. Andrew Carnegie, who was known as a pronounced advocate of simplified spelling, that he would furnish funds sufficient for the printing of proposals and for the circulation of information and appeals. In Jan., 1906, the committee organized itself into the Simplified Spelling Board, and chose additional members. Offisers were elected, an executiv committee was appointed, and arrangements were made for a campain extending over a period of years. The organization of the board was announced in the public press March 12, 1906, and the first formal proposals for simplification were issued March 21, 1906. These proposals consisted of a pamflet cald *The First Step* (Circular No. 1) and *A List of Common Words Spelled in Two or More Ways*, of which the Board recommended the simpler form for adoption (Circular No. 2; also, enlarged, with references, No. 5, June 18, 1906). These were followd at intervals by other circulars of information and argument, dealing with the educational and literary phases of the subject, with simplified spelling in schools, in universities, in periodicals, in poetry, in publishing, etc.; and many thousand persons in the United States, Canada, and Great Britain, signd a card agreeing to use, as far as may be practicable, the simpler spellings that were recommended by the Simplified Spelling Board.

In the face of much opposition the movement stedily increast in strength, attracting to its support not only a great number of educators and scholars, but many leaders in social, religious, and political reform. The President of the United States, Mr. Roosevelt, announced his approval of the movement Aug. 24, 1906. On Aug. 27 he sent a letter to the Public Printer, directing him to use "in all government publications of the executive departments" the simpler spellings included in "the 300 words enumerated in Circular No. 5" of the Simplified Spelling Board. This action excited much interest thruout the world, and was met by much opposition, and enormous misrepresentation, in the public press. In Dec., 1906, the House of Representativs attacht to an appropriation bill a clause providing in effect that no part of the appropriation should be used for printing in simplified spelling any documents printed by act of Congress. This reduced the Public Printer's use of simplified spellings to documents from the executiv department, *not* printed by order of Congress. But this action of Congress has not been regarded by educated men as being intellectually conclusiv, and the use of simplified spellings has been kept up by many public officials, in accordance with their personal convictions, and the recommendation of competent advisers. This use is widely prevalent among men in the scientific bureaus, and among officers of the army and navy.

The support given to the movement at the start was greatly increast as a result of the discussion in the newspapers, and every month has shown definit gains in numbers and in influence. The Board has up to date issued twenty-four circulars of the regular series, a number of special circulars, ten special leaflets, and seven numbers of the *Simplified Spelling Bulletin*, a quarterly periodical. All has been done deliberately, temperately, patiently. All the simplified forms thus far recommended by the Board are containd in Circular No. 23. These circulars and the *Bulletin* have been widely circulated thruout the world. Many thousands of persons have signd the card agreeing to use the simplified spellings. Thousands of teachers are using them personally, and many have introduced them into their schools. Some normal schools, as the Iowa State Teachers' College, the Illinois State Normal University, the Colorado State Normal School, and the Normal School at Truro, Nova Scotia, have adopted simplified spellings to the full extent recommended by the Board, and are not only teaching them, but are using them in their publications.

The simpler spellings have been used in a large number of periodicals, of which the Board printed, in Dec., 1908, a list of more than 250. Simplified spellings have also appeard in a number of professional and technical magazines, and are freely used in a number of college journals. Among these simplified spellings, *program* and *catalog* are now establisht as the prevailing forms, and *tho* and *thru* are everywhere common. The influence of the Board is seen also in an extensiv use, in advertizements, of spellings which, if not always "simplified," are at least "insurgent," and mark a revolt against orthografic stagnation. Among men of learning there is now little public opposition, and it would be difficult to find any recognized philologist who would be willing to declare himself against the principle of simplifying English orthografy. Indeed, few educated men can now be found who will maintain that English spelling, of all human inventions, should be kept forever exempt from improvement.

The Simplified Spelling Board in 1909 consisted of forty-six members. The American members were then as follows: E. Benjamin Andrews, O. C. Blackmer, David J. Brewer, James W. Bright, Andrew Carnegie, Clarence G. Child, Samuel L. Clemens ("Mark Twain"), Melvil Dewey, Oliver F. Emerson, David Felmley, Isaac K. Funk, Lyman J. Gage, Richard Watson Gilder, Charles

H. Grandgent, William T. Harris, George Hempl, Thomas Wentworth Higginson, Henry Holt, William James, David Starr Jordan, Thomas R. Lounsbury, Francis A. March, Brander Matthews, William H. Maxwell, William W. Morrow, Theodore Roosevelt, Charles P. G. Scott, Homer H. Seerley, Benjamin E. Smith, Charles E. Sprague, Calvin Thomas, E. O. Vaile, William Hayes Ward, Andrew D. White, and Robert S. Woodward.

The Board also included seven members in England, two in Canada, and two in the Australian Commonwealth, as follows: In England, William Archer, Henry Bradley, Frederick J. Furnivall, H. Stanley Jevons, Sir James A. H. Murray, Walter W. Skeat, and Joseph Wright; in Canada, Alexander H. MacKay and William F. MacLean; in Australia, Thomas G. Tucker; in New Zealand, Sir Robert Stout.

In 1909 the board sufferd the loss of two eminent members, namely, Mr. Richard Watson Gilder and Dr. William T. Harris, and in 1910 of four other distinguisht members—Justice David J. Brewer, Mr. Samuel L. Clemens, Dr. Frederick J. Furnivall, and Prof. William James. The number of members in Dec., 1910, was forty.

Advisory Council.—In 1907 was organized the Advisory Council of the Simplified Spelling Board. The names of the first members were publisht Jan., 1908. This council consists in great part of scholars, educators, men of science and men of affairs, representing nearly every state in the Union. The number of members in Dec., 1910, was 224. All proposals for simplification are referd to the Advisory Council as well as to the Board before they are recommended to the public for adoption. The members constitute, each in his own locality, centers of information and advice on the subject. The joint body is the largest body of men ever organized for the consideration of the orthografy of any language. It includes a great proportion of the scholars who are recognized as authorities in English philology or in educational science, and it is strengthend by the election of new members from time to time.

In England.—A Simplified Spelling Society has been establisht in Great Britain, with hedquarters at 44 Great Russell Street, London. This society was organized in Sept., 1908, with Prof. Walter W. Skeat, the eminent etymologist, as president, and Mr. William Archer, the well-known dramatic critic, as secretary. Among the officers and members are such eminent men as Sir James A. H. Murray and Dr. Henry Bradley, editors of the Oxford English Dictionary; Sir Frederick Pollock, Sir William Ramsay, the Right Hon. James Bryce, Prof. Gilbert Murray, Prof. Arthur S. Napier, and officials of the Education Department. Many scholars, professors, teachers, and missionaries in the Australian Commonwealth, in Africa, India, China, Japan, the Philippine Islands, and South America, are in correspondence with the Board, and are promoting the movement as an advantage, if not a necessity, to the English language in its contact with other languages. Plans for direct coöperation between the Simplified Spelling Board and the Simplified Spelling Society have been formed, and a conference, leading, it is hoped, to an international commission will be held in London early in 1911.

The movement for simplified spelling is opposed by an immense popular prejudis, and deals with a subject about which the intelligent public knows less than it does about any other subject. The movement has, therefore, been the object of much misrepresentation. The Board is endevoring in its publications to dissipate this prejudis and to diffuse correct information; and it desires that persons who feel any dout about the propriety of the movement, or about its principles, shall ask for the circulars of information publisht by the Board itself, and make up their minds after, and not before, acquiring the information. A request sent to the Simplified Spelling Board, No. 1 Madison Avenue, New York, will bring the necessary information free. Those who are inclined to take an interest in the movement will find it difficult to gather correct information about it from the unprecise utterances of the public press. Circular No. 23, dated March, 1909, contains a full "Alfabetic List of Simplifications in Spelling recommended by the Simplified Spelling Board up to Jan. 25, 1909." These recommendations are all applied in this article. It will be seen that they are far from "radical." They are, in fact, only the "first steps" to a reasonable revision of English spelling. Other simplifications are under consideration, but none have been publisht since the date mentioned.

Esperanto.—The sixth international congress of Esperanto was held in Washington, Aug. 14–20, 1910, the previous congresses having been held annually at Boulogne, Geneva, Cambridge (Eng.), Dresden, and Barcelona. There were present official delegates from twenty-three nations speaking eleven languages, and representatives from other countries speaking as many more. The peculiarity of the congress, distinguishing it from all other international gatherings, was the presentation of all papers and the transaction of all business in the single language of Esperanto, the only exception being in the case of the Chinese delegate, who used his native tongue. A feature of the congress was the address of Dr. Ludwig L. Zamenhof, of Warsaw, Poland, the author or inventor of Esperanto. John Barrett, director of the bureau of republics, and president of the Esperanto Association of North America, presided. Prizes were awarded for the best literary productions in Esperanto, several being awarded to American competitors. The experiences of the Washington congress, and the facility with which the artificial international language was utilized in the proceedings by its members, is claimed as a demonstration that Esperanto is making good its claim to be a feasible and effective medium of international communication, especially for commercial purposes. This claim is not admitted by the adherents of rival artificial languages, of which there are a number, including Volapuk, Bolak, and Ido, the last having also an international organization. It is agreed, even among Esperantists, that Dr. Zamenhof's language possesses certain obvious and unnecessary defects, which impair its simplicity, consistency, and effectiveness. In all probability the more important changes suggested for the improvement of Esperanto will ultimately be adopted.

XXXIII. EDUCATION AND EDUCATIONAL INSTITUTIONS

AMERICAN EDUCATION

Anna Tolman Smith

A YEAR OF PROGRESS

The record of education in the United States for 1910 shows a continuance of the progress that has marked previous years of the decade. An impressive feature is the magnitude of the work carried on in the common or public schools. These enrolled during the year above 17,200,000 children and youths, or 19.6 per cent of the population, employed nearly 496,000 teachers, and were maintained at an expense of about $380,000,000, equivalent to $31 for every pupil in average attendance. No other country in the world provides at public expense for the instruction of such a large proportion of the population; and excepting new provinces in Canada, where every material condition has to be supplied at once, no country pays such a high rate per capita for the maintenance of public schools—viz., $4.27, estimated on population; $31 estimated on average attendance.

Private schools enrolled during the year 1,500,000 pupils, and the registration in universities, colleges, and professional schools was in round numbers 300,000; hence, altogether, 19,000,000 children and youths were under instruction during the year, or a little more than twenty-one per cent of the total population. The corresponding total in 1900 was 17,299,000, an increase of 1,701,000 in ten years, which is about equivalent to the rate of increase in population for the same period.

The statistics show that 93.37 per cent of all pupils were in schools of elementary grade; 5.05 per cent in secondary schools; and 1.58 per cent in higher institutions. As regards control, public schools comprised 92 per cent of all elementary pupils, and 82.8 per cent of secondary pupils; of students in higher education, 45½ per cent were enrolled in state or city institutions.

STATISTICS OF EDUCATION

The status of the public or common schools of the country for the current year and the progress during the decade are indicated by the following statistics covering salient features of the record.

Upon the total enrollment of 17,200,000 pupils, an average attendance was maintained of 71.2 per cent, a gain in this particular of 3 per cent above the average in 1900. The teaching force increased from 431,918 to 495,463, a gain of 14 per cent as against 9⅔ per cent gain in the number of enrolled pupils. In other words, there were fewer pupils to a single teacher. The average monthly wages of teachers show decided increase in the decade—i. e., for men teachers from $47.55 to $62.35; for women teachers from $39.17 to $51.61. The actual increase in salaries is greater, as the average length of the school term was extended from 143.7 days in 1900 to 154.1 days in 1909, and no decline has since been reported. The only falling off noticeable is in the number and relative proportion of men teachers. In 1909 there were 104,495 men in the service, or 21 per cent of the entire force as against 29 per cent in 1900.

School Property.—The value of school property was estimated in 1909 at $945,400,000, an advance of sixty-five per cent above the value in 1900. This gain is in great measure the result of the campaign for improved schoolhouses in the West and South carried on by organized forces, such as the school improvement leagues, which are largely assisted by women's clubs.

The sources of support for this system of public schools and the increased revenues are shown in the following tabular statement covering 1900 and 1908, the latest year for which the data are attainable.

FINANCIAL STATISTICS OF PUBLIC SCHOOLS.

Income

Source.	Amount. 1900.	Amount. 1908.	Rate of Increase. Per Cent.
Receipts:			
From income of permanent funds and rents	$9,767,110	$22,419,282	129.54
From state taxes	36,281,256	58,097,151	60.13
From local taxes	163,897,478	259,340,960	58.23
From all other sources	25,393,493	42,062,133	65.64
Total received	$235,339,337	$381,919,526	62.28

Expenditure

	1900.	1908.
Total	$214,964,618	$371,344,410
Per capita of total population	$2.84	$4.27
Per capita of average attendance	$20.21	$30.55

Since every state and territory in the Union has independent control of its public schools, the statistics above given relate to forty-nine different systems and therefore conceal many, and in some cases, startling deviations from average conditions. For example, the average number of school days in a year, considering the entire country, is 154; but in three states it is less than 100 days, and in seven other states between 98 days and 121. Teachers' salaries range from an average of $32.50 a month for a school year of five months, to $88.50 for a school year of nine and a half months. The annual expenditure per capita of average attendance varies from $6.79 to $72.34. There are many causes for these inequalities, but the chief causes are the differences in industrial conditions and their effect in massing or distributing populations. Hence for an understanding of current educational movements, it is important to classify the main particulars relating to public schools: (1) According to geographical sections; and (2) in urban and rural groups. On account of the extent of the country and the varying periods covered by the official reports, some being biennial, others annual; some closing the record in July, others in Dec., the statistics of state systems of education are never complete for analysis for the current year. Since, however, changes in the aggregate are hardly discernible from year to year, the statistics used in the detailed tables comprised in this review express practically present conditions.

The distribution of the estimated population of the United States in 1908 by geographical sections, the relation of the school population to the total population, and to the adult males twenty-one years of age and over, who constitute what may be termed on the average the producers of the country, are shown in the following table:

XXXIII. EDUCATION AND EDUCATIONAL INSTITUTIONS

THE TOTAL POPULATION, THE SCHOOL POPULATION, AND THE ADULT MALE POPULATION.

Geographical Divisions.	Estimated Total Population in 1908.	The School Population.		Estimated Number of Male Persons 21 Years of Age and Over in 1908.
		Estimated Number of Children 5 to 18 Years of Age in 1908.	Percentage of Boys.	
United States	86,874,990	24,613,763	50.38	24,186,408
North Atlantic Division	24,169,345	5,904,913	50.02	7,190,134
South Atlantic Division	11,736,630	3,731,484	50.32	2,807,208
South Central Division	16,695,488	5,457,849	50.62	4,035,348
North Central Division	29,391,085	8,294,703	50.48	8,425,315
Western Division	4,882,442	1,224,814	50.59	1,728,403

The element of the total population which most seriously complicates the school problem in this country is that of racial origin. The latest data on this point are given in the census of 1900, but, on the presumption that the relative proportion of each group to the total has not materially changed, the ratios given in the adjoining table are significant.

The following summarized tables bring into comparative view the different geographical sections of the country in respect to salient particulars of the public school systems:

Geographical Divisions.	Per Cent. of Native and Foreign White and of Colored in Total Population.		
	Native White.	Foreign White.	Colored.
United States	74.4	13.4	12.2
North Atlantic Div.	75.6	22.5	1.9
South Atlantic Div.	62.2	2.0	35.8
South Central Div.	67.2	2.5	30.3
North Central Div.	82.1	15.8	2.1
Western Div.	76.1	18.6	5.3

SCHOOL ENROLLMENT.

Geographical Divisions.	Pupils Enrolled.		
	Number.	Per cent. of Population 5 to 18 Years of Age.	Per cent. of Total Population.
United States	17,061,962	69.32	19.64
North Atlantic Division	4,047,560	68.55	16.75
South Atlantic Division	2,421,078	64.88	20.63
South Central Division	3,532,885	64.73	21.16
North Central Division	5,941,149	71.63	20.21
Western Division	1,119,290	91.38	22.92

SCHOOL ATTENDANCE.

Geographical Divisions.	Average Number of Pupils.	
	Present Each Day.	Ratio to Enrollment.
United States	12,154,172	71.24
North Atlantic Division	3,121,874	77.13
South Atlantic Division	1,565,914	64.68
South Central Division	2,261,497	64.01
North Central Division	4,385,362	73.81
Western Division	819,525	73.22

LENGTH OF ANNUAL SCHOOL TERM.

GEOGRAPHICAL DIVISIONS.	Average Number of Daily School Sessions.	Average Number of Days' Attendance for Every Child 5 to 18 Years of Age in 1907–8.	Average Number of Days Attended by Each Pupil Enrolled in 1907–8.
United States	154.1	76.1	109.8
North Atlantic Division	180.8	95.6	139.5
South Atlantic Division	124.7	52.3	80.6
South Central Division	118.2	49.0	75.7
North Central Division	162.2	85.8	119.8
Western Division	163.3	109.3	119.6

TEACHERS.

GEOGRAPHICAL DIVISIONS.	TEACHERS.		Average Monthly Salaries.
	Total Number.	Percentage of Males.	
United States	495,463	21.1	$53.88
North Atlantic Division	122,790	13.6	64.31
South Atlantic Division	57,426	28.4	37.20
South Central Division	80,026	32.4	44.00
North Central Division	199,853	19.6	53.83
Western Division	35,368	17.8	67.36

SCHOOL MONEYS RECEIVED IN 1907–8.

GEOGRAPHICAL DIVISIONS.	Income of Permanent School Funds and Rent of School Lands.	FROM TAXATION.			From Other Sources, State and Local.	Total Revenue (excluding Balances on Hand and Proceeds of Bond Sales).
		From State Taxes.	From Local Taxes.	Total from Taxation.		
United States	$22,419,282	$58,097,151	$259,340,960	$317,438,111	$42,062,133	$381,919,526
No. Atlantic Div.	441,939	19,848,709	117,862,767	137,711,476	3,563,746	141,717,161
So. Atlantic Div.	199,587	11,239,347	10,981,218	22,220,565	1,163,097	23,583,249
So. Central Div.	2,973,270	10,485,331	8,302,131	18,787,462	7,991,535	29,752,267
No. Central Div.	17,801,820	5,896,193	101,076,569	106,972,762	26,687,510	151,462,092
Western Div.	1,002,666	10,627,571	21,118,275	31,745,846	2,656,245	35,404,757

EXPENDITURE FOR PUBLIC SCHOOLS, 1907–8.

GEOGRAPHICAL DIVISIONS.	Total.	Per Capita of Average Attendance.	Per Capita of Population.
United States	$371,344,410	$30 55	$4.27
North Atlantic Division	133,858,714	42.88	5.54
South Atlantic Division	22,807,403	14.56	1.95
South Central Division	30,113,283	13.32	1.80
North Central Division	147,971,563	33.74	5.03
Western Division	36,593,447	44.65	7.49

With regard to revenues, it is noticeable that state and local taxes furnish the greater proportion, 83.12 per cent, and further that, excepting in the South Atlantic and South Central divisions, the income from the local tax greatly exceeds that from the state tax.

Of the total expenditure, about sixty per cent is devoted to salaries, and twenty per cent to sites and buildings.

In the South.—The significant fact brought out by the foregoing tables is that of the educational disadvantages of the two divisions, the South Atlantic and South Central, which make up the southern section of the country. In this section alone the school population exceeds the number of male adults, or normal wage earners; it is here also that the negro population, with its high ratio of illiterates, is massed; but, in respect to funds for public instruction, this section is in marked degree below all the others. These distinctions are emphasized by the comparison between urban and rural communities in respect to educational conditions. The South is essentially rural, contributing only fourteen per cent to the total enrollment in urban public schools (cities and villages above 4,000 inhabitants), and of the total expenditure for those schools, estimated in round numbers at $205,150,000, bears but $16,712,000, or eight per cent.

An important part of the year's records relates to movements for the increase and adjustment of public instruction. These movements did not originate within the year, but they have developed greater strength and definiteness of purpose than heretofore; they are directed either to the removal of the inequalities above noted or to the creation of new orders of public instruction to meet industrial demands. The conviction is spreading that, with all the lavish expenditure upon them, the public schools do not reach those that need them most, nor give the training that will serve them best. In this view, public education, although purely a matter of state and local administration, becomes a national concern, and there is a noticeable tendency to invoke national aid in the effort to deal with it more effectively.

ACTION OF THE FEDERAL GOVERNMENT

Bureau of Education.—The Federal Government contributes to the progress of public education in two ways: (1) Through the agency of the bureau of education, which, by a judicious use of its advisory functions and its impartial record of existing conditions, enables each community to participate in the experience of every other; (2) through appropriations for education which benefit the entire body of the people. The resources and functions of the bureau have been somewhat increased during the year, and it has come into closer advisory relations with the officials in charge of state and city systems of public instruction.

The publication of a bulletin has greatly increased its value to schoolmen and legislators by the opportunity thus afforded for the timely treatment of problems of immediate interest.

Congressional Appropriations.—The cash appropriations for education made by the sixty-first Congress (1910) amounted to $17,566,981, distributed as follows:

SUMMARY.

Department of State	$31,450.00
War Department	2,234,598.06
Department of Justice	78,800.00
Navy Department	1,028,094.05
Department of the Interior	7,681,921.97
Department of Agriculture	1,628,580.00
Library of Congress	841,755.18
Smithsonian Institution	*a*851,200.00
District of Columbia	*b*3,189,582.00
Total	$17,565,981.26

a Includes $57,500 to be paid from the revenues of the District of Columbia.

b One-half of this amount is to be paid from the revenues of the District of Columbia.

At the same session Congress made unusual provision for common schools in the newly admitted states, Arizona and New Mexico. In addition to the four sections in each township set apart for common schools, it was provided that five per cent of the net proceeds of sales of public lands lying within said state should be paid to the state to form a permanent inviolable fund, the interest only of which shall be expended for the support of common schools within the said state.

STATE EDUCATIONAL COMMISSIONS

Massachusetts and New York.—In view of new demands pressing upon the public schools, a state commission was appointed in Massachusetts, under acts of June 21, 1906, and June 2, 1908, with instructions to investigate methods of industrial training and local needs; to advise and aid in the introduction of industrial education in independent schools that may be established; to provide for lectures on the importance of industrial education and kindred subjects. New York State, through the agency of its reorganized system, was already dealing comprehensively with the same problems. These two states are therefore leading in the movement for readjusting the public-school systems and enlarging their scope. The policy of appointing state commissions for purposes similar to those intrusted to the Massachusetts commission has been adopted by seventeen additional states, five of the commissions having been appointed during the current year. The commissions as a rule include, in addition to educators, representative public men, and so far legislatures have shown the disposition to adopt the recommendations of these bodies. Thus far-reaching changes in the systems of public education are being accomplished without disturbing the solid foundations on which those systems rest.

STATE EDUCATIONAL LEGISLATION, 1910

The most important laws pertaining to education and the related subject of child welfare passed by state legislatures during the year are here noted under headings indicating their main bearing.

Administration.—*New York.* Supervisory functions of the state commissioner of education extended to higher institutions; authority over city school systems increased; invested with final authority in respect to disputed questions relating to official acts of any school officer or school meeting. Legislative functions of board of regents extended.

System of rural school supervision radically changed by creation of district school superintendents in place of former school commissioners. District superintendents must possess teacher's certificate, pass a prescribed examination and act under the supervision of the state commissioner, but are elected by district directors chosen by electors of supervisory district. Minimum annual salary of $1,200 for district superintendents, with an allowance of $300 for official expenses borne by state.

This measure places New York on a level with Massachusetts and a few other states, which have provided for a complete system of rural supervision.

Rural Schools.—Laws pertaining to rural schools were passed as follows:

Massachusetts.—Providing that pupils of industrial schools shall be carried at half rate to and from school.

Mississippi.—Authorizing district school trustees to provide for the transportation of pupils to consolidated schools.

Ohio.—Establishing local option in respect to consolidation of rural schools and transportation of pupils.

Rhode Island.—Allotting $100 to any graded school for every ungraded school consolidated with it.

South Carolina.—Special grant for consolidated schools, $100 for every $100 raised locally and $50 for buildings.

Virginia.—Appropriation of $25,000 for the encouragement of rural graded schools; maximum for each school, $200.

Legal provision for instruction in agriculture in existing, or additional, public schools was made as follows:

As a subject of instruction in elementary and secondary schools, required in Louisiana, authorized in Maryland.

Massachusetts.—Board of education directed to conduct an investigation as to the establishment of a system of agricultural schools.

Mississippi.—Authorizes each county to establish two agricultural high schools; appropriation for the purpose, $30,000.

New York.—Cities and union free-school districts authorized to establish high schools of agriculture, mechanic arts, and home making, state aid—$500 for first teachers, $200 for each additional teacher.

Virginia.—Authorizes the establishment in each congressional district of high schools of agriculture, domestic arts and sciences, and manual training; counties may appropriate money for the same.

School Finance.—In view of the growing importance of school finances a meeting of school-auditing officers was called, at their own request, by the commissioner of education and an association of the said officers, organized for the purpose of bringing about the standardization of fiscal and other data of school systems.

Georgia.—Proposed constitutional amendment abolishing the restriction of county taxation to purposes of elementary schools.

Louisiana.—Proposed constitutional amendment securing to parish school boards the proceeds of a tax not less than three mills on the dollar; giving school officers independent control of their financial affairs.

Ohio.—Increase of amount of state appropriation for schools from $2,330,000 to $2,470,000, and of rate of distribution from $1.85 to $2 per capita of school population; the appropriation in aid of weak districts was increased from $45,000 to $50,000.

South Carolina.—Direct appropriation for weak districts first made in 1909 increased this year from $20,000 to $60,000. Maximum allowed for district school tax raised from four mills to eight mills on the dollar.

Compulsory Education.—The legislatures of three states have passed measures during the year strengthening the compulsory school-attendance laws or extending the required school period. An amendment to the state constitution providing for compulsory education was vigorously pressed in the Georgia legislature, but failed by a narrow margin to secure the required two-thirds vote. At present forty-one states and the District of Columbia, comprising eighty-four per cent of the population, have compulsory laws, as against thirty-five states in 1905 with seventy-three per cent of the population. Five of the remaining states have labor laws restricting the employment of children, which include educational requirements. Hence two states only have no legal requirements as to the elementary education of the children within their borders. In twenty-seven states the annual compulsory period is the full school term. Differences in the length of the period, however, are of less consequence than the differences in respect to provisions for enforcing the law.

The laws cited are the practical outcome of the widespread agitation of all the interests of childhood. Associations, conferences, and other child-saving agencies have all joined in the effort to create public opinion in the support of these measures and to get them enacted by state legislatures.

EDUCATIONAL ASSOCIATIONS, BOARDS, AND TRUSTS

The National Education Association, by reason of its size, prestige, and organization, has a powerful influence in shaping and unifying educational ideals. The report of the secretary of the association, at the close of the annual meeting for 1910 (the forty-eighth), showed an active membership of 7,000, a permanent fund of $170,000, receipts for the year from all sources amounting to $34,788, and an expenditure for the year of $30,236. The purposes of the association are strictly professional, and by its organization in departments (at present seventeen, besides the national council), provision is made for concentrating attention upon the distinct problems of different orders of instruction, while the general meetings excite great enthusiasm. The resolutions adopted by the association the present year centered in the problems of vocational education, the protection of children from excessive labor and unhealthy surroundings, and the means of strengthening the teaching force of the country. The opinions of the association, formulated in the general and special sessions, are taken up by state and local associations of teachers and school officers, and thus their effect is widely multiplied.

Naturally other associations engaged in kindred work gravitate toward this central body; the present year no less than ten associations, most of them national in scope, held their annual meetings at the same time and place.

The Southern Educational Association, which held its twentieth annual session at Charlotte, N. C., last December, works in ways similar to the foregoing, but is more limited in scope. The chief topics of discussion at the last meeting were the high schools and the colleges as related to the needs of the South.

The American Association for the Advancement of Science (Education Section L), like the corresponding section of the British Association, is engaged in the scientific study of special problems of education, and therefore, while contributing to the formation of sound educational doctrine, does not directly affect public opinion. The subject considered by this section in the meeting of the present year, the third in its history, was the American college, which is one of immediate practical importance.

General Education Board. — Outside the educational associations great organizations have been recently formed having for their object the increase and improvement of the means of public education. Chief among these is the General Education Board, charged with the administration of the Rockefeller funds for education. By reason of these resources, amounting in the aggregate to $44,000,000, and the scope of its activities this board affects every vital interest of education in the country. Its policy is to work through existing institutions and agencies for definite purposes. At present these are the promotion of practical farming in the southern states; the development of a system of public high schools in the same section, and the promotion of higher education in all the states. The total disbursements by the board for the past year amounted to $1,457,651, distributed as follows: to colleges and universities, $1,210,000; to public high-school propaganda, $30,200; to schools for negroes, $87,000; for a system of demonstration farms in the South, $113,000; other objects, $17,451.

The Carnegie Foundation for the Advancement of Teaching reports a total grant for the year of $176,890, and 115 names added to the roll of those receiving retiring allowances. The number of beneficiaries carried on the list was 318, and the entire grant in force was $466,320. The immediate activities of the Foundation pertain to higher education, but in its efforts to promote scholastic standards it is aiding a movement that extends to other departments of education.

For the education of the colored people $71,000 were appropriated during the year from the John F. Slater Fund and $46,078 from the Anna T. Jeanes Foundation.

The Peabody Education Fund, the first of the great private donations devoted to the interests of popular education, has completed this year the period of general distribution, and in accordance with the plans of the trustees $1,000,000 of the principal were assigned as a permanent endowment to the George Peabody College for Teachers at Nashville, Tenn., the state and city and Davidson County having made up the $500,000 required as a condition of the gift.

Annual Conference for Education in the South.—The administration of the several trust funds mentioned has served to arouse the sense of national danger from conditions which cannot safely be left to the ordinary course of public education. As a consequence other agencies have been invoked, of which the most important is the Annual Conference for Education in the South. The thirteenth session of this conference was held in Little Rock, Ark., April 6–8, 1910, with a registration of 1,200 members in attendance. As usual, the meetings of the Association of Southern State Superintendents and the Supervisors of Women's School Improvement Work, which are outcomes of the conference, were held in conjunction with the conference.

EDUCATION OF THE NEGROES

First among the educational problems that concern the nation as a whole is that of the negro population in the southern states. Notwithstanding the efforts made for their education and the signal success of particular schools devoted to this purpose, progress in this respect is not keeping pace with the general advance of the country. The fact is emphasized by the high enthusiasm for education that has been awakened in the South, and the remarkable progress made by that section within the last decade. It is difficult to indicate by the usual statistics what that progress has been, but a single particular may be taken as the index. In 1900 the two divisions that make up the South expended $27,675,613 on public schools; in 1908 the amount was $52,920,691, a gain of $25,245,078, or ninety-one per cent; the gain per capita of population, about sixty-one per cent, though not so great, is scarcely less significant.

The president of the Conference on Education in the South, the greatest civic organization ever formed in the interests of education in this country, and perhaps in any other country, estimates that the statistics for 1910 will show an increase in the current expenditure for public education in the southern states of 150 per cent since 1900, and in the value of school property a gain of 200 per cent. But the conference itself sets against these facts startling evidence of the low state of negro education.

In the sixteen former slave states and the District of Columbia there are in round numbers 3,100,000 colored children of the legal school age, i. e., five to eighteen years. Of these 1,666,000, or fifty-three per cent, were in school in 1909, and on this enrollment an average attendance of sixty-two per cent was maintained. That is, out of every 100 colored children who might be in school, thirty-two attended. For this number there were 30,175 teachers, or one teacher for every thirty-four pupils.

The following statistics show the movement in respect to these salient particulars for a period of eighteen years and comparison with the corresponding particulars for the white population of the same section:

PROGRESS OF EDUCATION IN THE SIXTEEN FORMER SLAVE STATES AND THE DISTRICT OF COLUMBIA PUBLIC SCHOOLS.

	Average Daily Attendance.		Per Cent. of Enrollment.		Number of Teachers.	
	White.	Colored.	White.	Colored.	White.	Colored.
Total, 1907–8	3,103,357	1,035,747	66.13	62.18	116,539	30,175
Total, 1899–1900	2,775,059	981,026	65.12	62.88	98,710	27,313
Total, 1889–90	2,165,249	813,710	63.64	62.74	78,903	24,072

Colored Schools.—In all conditions of efficiency the colored schools are at a disadvantage as compared with the white schools of the section, and vastly inferior to those of the northern and western states. Special investigations show that, in general, the teachers of rural colored schools receive from one half to two thirds the monthly salary of white teachers in the same state, and that for a shorter school year. According to recent estimates in North Carolina an average of $3.81 a year is paid for the education of each white child in the public schools; for each colored child, $1.58; corresponding estimates for Mississippi are $7.63 and $1.89; South Carolina, $10.34 and $1.70. If comparison is made with the average expenditure per pupil in other sections, the inequality is emphasized; for example, in the north Atlantic division where the expenditure is $43 per capita of average attendance, or the western division where it is $44.65.

Attention has already been called to the fact that in the South the state tax is the largest source of income for public schools. This amount is distributed impartially at a certain rate per capita of the population of school age. For various reasons this is not the case with the local school tax. Efforts are being made in some of the states, Virginia and North Carolina in particular, to equalize the application of this fund also; but even were this purpose accomplished, the income of the schools for the colored race would not supply competent teachers and decent school houses. The results achieved by the application of special funds, the Slater, the Anna T. Jeanes, etc., emphasize the need of liberal resources under judicious management in the effort to adapt the public school systems to the peculiar needs of the negro population.

The number of public high schools for colored youths in the states above referred to is 112, with 383 teachers (of these, 214 men), and an enrollment of 6,806 students in secondary studies. The number of private secondary and higher schools for the race is 135 with 2,417 teachers and 44,973 pupils. Of this number 23,279 were reported in secondary grades and 4,185 in collegiate or professional. Altogether 28,270 colored pupils (12,796 male, 15,474 female) were above the elementary grade. This small company of students must furnish all the professional men and all the teachers above the most elementary that are required by the negroes of the South.

The hopeful features of the situation are the existence and influence of certain great institutions—Hampton and Tuskegee, high examples of the industrial type; Atlanta and Fisk, of the academic type—and the recently organized efforts for the introduction of industrial training into the common schools for the colored people, under expert supervision by the aid of the Negro Rural School Fund derived from the Anna T. Jeanes Foundation. (See XV, *The Negro.*)

CHILD WELFARE

The Child Labor Committee.—The child welfare problem is national, not in the governmental sense of the term, but because it has excited the interests of the entire country. National consciousness of responsibility in regard to the working child led to the organization of the National Child Labor Committee in 1904. The objects of this committee are directly related to public education through their efforts to secure laws protecting working children from premature employment. To this end the committee asks the public to stand for the elimination of all children under fourteen years of age from competitive industry, and of all children between fourteen and sixteen years of age from employment unless they have been given "an opportunity to lay the foundation of an American education." The committee keeps up an active campaign in behalf of these principles through public meetings, and publications which set forth precisely what has been done and what remains to be done for the accomplishment of their purposes, and by vigorous efforts to secure state legislation in the interests of children.

The welfare movement is not, however, confined to the single problem of the working child, but includes all the conditions that pertain to the physical and social improvement of the young. Measures have been taken by the associations of school hygiene and physical education to utilize the machinery of the public schools for the promotion of these purposes. (See XVII, *Prevention, Correction, and Charity.*)

The Russell Sage Foundation, though not limited in its scope to the welfare of children, is devoting a large part of its resources to this important work. Its publications are the key to the varied activities which this interest has excited.

School Hygiene.—From the report of a special committee appointed by the American School Hygienic Association, it appears that hygiene is taught in ninety-seven leading colleges of the United States, and is a prescribed course in forty-seven of these institutions.

This report also presents with full detail the general situation with reference to this subject in the public normal schools and public high schools of the United States, and presents a number of significant results, the more important of which are summarized in the following table.

Those relating to the high schools are particularly deserving of attention.

	Normal Schools.	High Schools.
Number of schools reporting	90	2,392
Average number of students per school	350	155
Per cent. of schools having department of physical education	53	5
Per cent. giving regular instruction in hygiene	74	16
Per cent. where instruction in hygiene is prescribed	59	11
Per cent. giving credit for work in hygiene	50	8
Per cent. giving courses in playground administration	29	1
Per cent. having medical examination of students	36	6
Per cent. having sanitary inspection of buildings by physicians	19	12

From an investigation made under the auspices of the bureau of municipal research of New York City, with the purpose of ascertaining what school authorities are doing to promote the physical welfare of school children in cities having a population of 8,000 or more, it appears that in four states, Colorado, Maine, Massachusetts, and New Jersey, physical examination of school children has been made compulsory, and in Ohio such examinations are compulsory for cities, but permissible for rural districts. In four states, California, Connecticut, Minnesota, and Washington, and in the District of Columbia, such examinations are authorized but not required. In Indiana the requirement applies to certain cities, and in Vermont the law applies to examination for defects of sight and hearing only.

In thirty states in which no laws on the subject have been passed, some form of physical examination for school children has been adopted in the principal cities. The number of cities having 8,000 inhabitants or more, in which, according to this report, physical examination of school children is conducted, reaches a total of 264. Of this number sixty-seven employ one or more school nurses; forty provide instruction to parents in the physical care of children, and ninety-one circulate cards of instruction among parents.

The object of the American School Hygiene Association is closely allied to that of the Physical Education Society and of the Public School Physical Training Society. The fourth annual congress of the Hygiene Association was held March 2d–4th of the present year in joint session with the other two societies.

The Play Ground Association of America, which held its fourth annual congress at Rochester, N. Y., June 7th–11th of the present year, and the School Garden Association not only promote the physical welfare of the young, but are helping in important ways to break down the separation between school and the living interests of school children. The boy-scout idea is fundamentally the same, but is more directly intended to direct the enthusiasm of boys into proper channels.

Federation of Women's Clubs.—The child-welfare movement is aided and extended by the action of the Federation of Women's Clubs, which at the biennial meeting held in Cincinnati, in May, presented reports of systematic work in the directions indicated, carried on by 2,373 clubs representing nearly every state in the Union. The plan of club work for the coming period includes better equipped, better ventilated, and cleaner school buildings; more numerous, larger, and better supervised playgrounds; medical school inspection and school nurses; physical education and instruction in personal hygiene; and instruction in normal schools in wise methods of presenting the essentials of personal and sex hygiene.

The agencies that have arisen outside professional circles mark the distinction between the educational problems that are national and those that belong essentially to the several states. The distinction has been recognized ever since the foundation of the government, which has made provision for common schools and for specific educational purposes, but without impairment of state sovereignty in the matter. (See XVII, *Prevention, Correction, and Charity.*)

VOCATIONAL EDUCATION

The movement for vocational education, which has become national in extent, aims at two results on the industrial side—one rural, pertaining to agricultural pursuits; the other urban, pertaining to the industrial demands of commercial and manufacturing centers. The double movement is, however, animated by the common purpose of uplifting the individual worker and ennobling and enriching the civic character of the people. Of many bills that have been introduced into Congress, embodying these purposes, two have become representative, the Davis Bill in the House and the Dolliver Bill in the Senate.

Agricultural Education.—As regards agricultural education, the present movement is designed to introduce the subject into every rural school; the support which it commands is indicated by the recommendations of numerous great associations interested in the public welfare, and by the action of state legislatures either requiring or authorizing the inclusion of the subject in the common schools. Such action has been taken by about thirty states. The consequent demand for teachers competent to take charge of this instruction has caused the land-grant colleges to establish new departments or to reorganize existing departments for the training of teachers, and to maintain summer schools for the same purpose. In addition to this action, which has already been taken by the majority of the colleges referred to, 160 normal schools have made special provision for this new order of training.

The establishment of agricultural high schools is advocated by the leaders of this movement, and the revised Davis bill, introduced in the House of Representatives in Feb., 1910, calls for an annual appropriation of $4,000,000 for this specific purpose, and $1,000,000 additional for branch experiment stations for the use of the said schools. Four states have made provision for schools of this class during the present year, following, in this respect, the precedent originally established by Wisconsin. (See XVIII, *Agriculture.*)

Demonstration Farms. — The National Government, through the Agricultural Department, has taken an active part in this general movement as related to the southern states, acting jointly with the General Education Board—the active agent of the Conference of Education in the South—for the maintenance of a system of demonstration farms. The supervision of the work is in charge of Dr. S. A. Knapp, a special representative of the department, and the appropriation made by the board for this purpose for the current year amounted to $113,000. This enterprise has been extended by the formation of boys' corn clubs. Thousands of boys, twelve years of age and upward, have made practical experiments on their home farms during the year as the basis of agricultural study in the schools. It is interesting to note that the General Education Board, which has contributed $464,000 to schools for negroes, arranges for the farmers of this race to share fully in the coöperative demonstration work.

The manner in which the various agencies for promoting the uplift of rural life are combining for their common purpose is illustrated by the annual conference of agricultural educators and rural workers. The meeting for the present year was held at Amherst, Mass., Aug. 9th to 12th, and brought together representatives of rural playgrounds, rural libraries, rural churches, rural schools, granges, etc.

Railroad Trains. — Railroads through the agricultural sections of the United States have adopted various methods of encouraging agriculture and improved agricultural methods along their lines. The St. Louis & San Francisco, the Atchison, Topeka & Santa Fé, the New York Central, and the Wabash railroads have been particularly active in this work. They do this by running educational trains in coöperation with the agricultural colleges, and by establishing independent demonstration farms.

Vocational Training for the Arts and Trades.—The problem of vocational training, as related to the staple industries of populous centers, is much more complicated than that of training for agriculture, and less progress has been made in its practical solution. The present year has been marked by the continued and widespread discussion of the subject in public and professional circles; by an approach to agreement between the advocates of opposing opinions as to aims and methods in the training, and the age at which specialization should begin; and by attempts at the classification of the existing provision for this form of training. The strong convictions underlying the movement are indicated by the support it commands from all the great national organizations pertaining to education or vitally interested in its effects, as well as of numerous local clubs and societies in different sections of the country.

The seventeen national associations which during the year have pronounced in favor of provision for this form of training as part of the public system of education include the National Education Association, the American Association of Manufacturers, the American Federation of Labor, five national technical associations (engineering or trade), the International Typographical Union, four national associations formed in the special interests of vocational education, and three great civic organizations.

As to the age at which vocational specialization should begin, the National Association of Manufacturers and the Federation of Labor have both adopted the reports of committees specifying fourteen years as the lowest age limit, and are thus, on this point, in agreement with educators in general.

Provision for vocational training in the industrial arts has been made by recent laws in seven states—Massachusetts, Connecticut, New York, New Jersey, Maryland, Michigan, and Wisconsin. In some other states existing laws have been construed to permit provision for such training as a department of the public-school system.

Under the Massachusetts law enacted in Jan., 1906, seventeen independent industrial schools were approved prior to Jan. 1, 1910. Originally these schools were in charge of a special commission, which was merged into the state board of education by legislative act of 1909.

The Wisconsin law, under authority of which the city of Milwaukee has taken control of the Milwaukee School of Trades, authorizes any city in the state, or any school district having within its limits a city desiring the privilege, to establish and maintain a school, or schools, for the purpose of giving practical instruction in the useful trades to persons having attained the age of sixteen years, said school to be a part of the public-school system. The law specifies conditions under which this authority shall be exercised, and the manner in which local taxes for its support shall be levied.

The industrial and trade-school act passed by the state legislature of New York, May 18, 1908, provided for the establishment of industrial and trade schools by cities and union free-school districts, and authorized the commissioner of education to apportion from the state school moneys $500 for each industrial or trade school organized under the act. In accordance with these provisions, a division of trade schools was formed in the State Department of Education, and eleven schools of the new type have already been established in nine different cities.

The entire problem of vocational or industrial education in the United States is still in a formative state. The discussions at the recent meeting of the National Society for the Promotion of Industrial Education (Boston, Nov. 17th–19th of the present year) indicate that opinion is crystallizing around the continuation school established for this work, but in organic relation to the public-school systems. As regards distinctive trade schools, there is a tendency to favor the combined action of industrial firms and municipal authorities in their establishment and support.

Provision has already been made in various ways to meet this demand, which has suddenly become a matter of general public attention and of legislative action. There are, at least, 138 schools in the United States which offer training to white students for specific vocations in the industries; of this number, eight are supported by state funds and forty-two by state and city appropriations united. Of the large number of institutions for colored students, in which industrial training is a feature, seven are supported by state and Federal appropriations. There are also about twenty high schools in which instruction with a vocational aim is fairly well organized.

In this country, as in Europe, the first provision for what is now generally termed vocational training had reference to commercial pursuits. This movement has made steady development, and presents already several well-defined stages, including university courses leading to a special commercial diploma. The distribution of this class of students in 1909 was as follows:

Class of Institutions.	Number of Schools.	Students in Commercial Courses.		
		Male.	Female.	Total.
Universities and colleges	66	4,673	732	5,405
Public and private normal schools	39	680	670	1,350
Private high schools and academies	386	4,084	3,110	7,194
Public high schools	1,431	34,796	37,459	72,255
Commercial and business schools	574	78,652	67,636	146,288
Total	2,496	122,885	109,607	232,492

STATUS OF THE TEACHING FORCE OF THE NATION

The statistics already presented disclose great inequalities in the provision for public instruction between different parts of the country, but they give little conception of the wide disparity in the qualification of teachers. This is barely hinted by the differences in salaries, and in the present state of information on the subject little more is possible except by negative statements. The school laws of nearly every state require, it is true, some guarantee of fitness on the part of candidates for a teacher's position, in the form of a certificate obtained by passing an examination before a state or local board; but the 300 different kinds of certificates recognized in this country present standards of wider variation even than the range of salaries. The requirements for an elementary school teacher (ungraded or graded school, country as well as city) extend from a university diploma, or equivalent examination, to a very simple examination in the three essential branches with English grammar and composition, United States history, and elements of physiology and hygiene. Furthermore, although the school laws prescribe some standard of qualification for even the lowest teaching position, a certain proportion of the teachers, at least one fifth considering the entire country, have only temporary certificates in respect to which the legal requirements have been waived. It is the rural schools that suffer from these makeshift teachers—that is, the schools which enroll above 11,000,000 pupils, or sixty-six per cent of the whole number, and employ above 361,000 teachers, or seventy-three per cent of the entire force. The evil arises from the apathy of the people, and the want of authoritative leadership in this matter; and it is aggravated at the present time by the new demands pressing upon the schools, breaking down the old principles of training before the new have been worked into pedagogic form. It has been recently declared upon high authority that in no other civilized country "are the teachers in the rural districts of the nation as a whole so untrained and unskilled as is the case in the United States."

Against this imputation must be placed the high degree of professional ability on the part of city school teachers, the leveling up that is going on in rural communities through the consolidation of schools, the efforts to make the rural school the social center of the community, and the incentive to professional studies furnished by reading clubs, circulating libraries, etc. In this connection, also, importance attaches to the movement for securing uniform certificates and standards throughout the country. The conference of chief state school officers, which was held at Lincoln, Neb., during the current year, declared in favor of such uniformity, and of the reciprocal recognition of teachers' certificates by the various states. Already twenty-seven states and territories give full recognition to diplomas that have been obtained in the institutions of other states.

Professional Training of Teachers.—All the states and territories provide for the public training of teachers by taxation, direct or indirect, and all but three support public normal schools. The latter make provision for the professional training of teachers in state colleges. There are at present 193 public normal schools, with an enrollment of about 74,500 students. Private normal schools number sixty-four, including such well-known institutions as the Teachers' College of Columbia University and Tuskegee for colored students. There are also training classes attached to certain high schools, and a high order of professional training is offered in specialized university courses.

The number of students in the training courses for teachers in 1909 was 103,824, distributed as follows:

Classes of Institutions.	Institutions.	Students.
Public normal schools	193	74,370
Private normal schools	64	7,918
Public universities and colleges	32	2,980
Private universities and colleges	70	4,829
Public high schools	733	9,622
Private high schools	195	4,105
Grand total	1,287	103,824
In all public institutions	958	86,972
In all private institutions	329	16,852

The number of graduates from the public normal schools in 1909 was 12,659. If the other institutions had furnished the same proportion of graduates the total addition of trained teachers to the service would have been 17,859, a number wholly inadequate to supply the annual losses with trained recruits.

In 1909 the amount of money paid by the states and municipalities for public normal schools was $9,043,277. This was an increase of $994,607 over the preceding year, when the aggregate reported was $8,048,670.

Of the total, $5,847,047 was used for current expenses and $3,196,230 for buildings and improvements. Each item is larger than the similar appropriation for any previous year in the history of public normal schools.

CITY PUBLIC SCHOOLS

The relative magnitude of the urban and rural public school work is shown in the following table:

COMPARATIVE VIEW OF URBAN AND RURAL PUBLIC SCHOOLS, 1909

	In 1,348 Cities and Villages of 4,000 Population and over.	Outside of these Cities and Villages.
Enrollment in public schools	5,673,893	11,388,069
Per cent. of total enrollment	33.26	66.74
Average daily attendance	4,376,469	7,777,703
Per cent. of attendance upon enrollment	77.13	68.30
Aggregate daily attendance	825,001,394	1,047,734,660
Average length of term in days	188.5	134.7
Enrollment in private schools	1,319,409	227,652
Male teachers for the public schools	11,750	92,745
Female teachers	122,515	268,453
Total number of teachers	134,265	361,198
Total expenditure for public schools	$183,170,820	$188,173,59
Expenditure per pupil in average attendance	$41.85	$24.1
Cost per pupil per day	.222	.1795

The special problems of urban systems pertain to cities of the first magnitude and to cities of the second order which are the seats of great industries. It is in these populous centers that the child of the slums is found and in which foreign populations are massed. But it is these cities, also, in which it is easy to excite a mighty force of public opinion and to command large resources for the work of public education.

The salient operations of the city systems are summarized in the accompanying tables, which show also the relative extent of the systems in the different geographical centers.

From the detailed statistics of city systems it appears that the public schools of the ten largest cities in the country enroll 1,603,286 pupils, or nearly one fifth of the entire enrollment in urban schools. These ten cities carry on a very large work in evening classes, and they must necessarily take the lead in the solution of problems of child welfare which arise in connection with urban life. As related to school provision, these problems center in that of the early withdrawal of pupils from all formal instruction, which means for the great body entrance upon precarious and unskilled labor. The evil of early withdrawal is not peculiar to the ten cities referred to, but is emphasized by their crowding populations. An investigation carried on in 318 cities of the country shows that of those who enter the first grade eighty-five per cent remain through the sixth. From that time rapid diminution takes place until in the eighth grade only fifty-nine per cent remain; forty-five per cent enter upon the high schools, but the second year of the high school shows only twenty-four per cent of the body of pupils whose career is followed from the first grade upward; the third year seventeen per cent; and only thirteen per cent remain to complete the fourth year of the course. It is in view of this condition that the demand for vocational training has assumed paramount importance as a factor in the economic progress of the nation.

The ability of the ten largest cities to cope with these problems is illustrated by the large proportion of the current expenditure for city schools which they are able to bear. The expenditure of these cities for public-school purposes in 1909 was $71,250,000, or 33⅓ per cent of the entire expenditure on the part of 592 cities having populations of 8,000 and upward.

SECONDARY EDUCATION

In the matter of secondary education, the United States presents several anomalies. The term has a restricted sense in this country, being applied to schools which offer a course

SUMMARY OF EXPENDITURES FOR DAY SCHOOLS IN CITIES AND VILLAGES OF 4,000 POPULATION AND OVER, 1909.

Cities of—	Cities of 8,000 and Over.			Cities and Villages of 4,000–8,000.		
	Number of Cities Reporting.	Supervision and Teaching.	All Purposes, Out of Funds Available for Expenditure During the Year.	Number of Cities and Villages reporting.	Supervision and Teaching.	All Purposes Out of Funds Available for Expenditure During the Year.
1	2	3	4	5	6	7
United States....	592	$102,084,030	$186,749,680	539	$9,337,348	$18,398,758
North Atlantic Div.	251	54,222,423	95,440,650	217	3,750,059	7,556,456
South Atlantic Div.	39	4,454,932	7,141,834	40	544,386	858,333
South Central Div..	60	4,535,858	7,558,973	42	549,800	1,153,342
North Central Div..	199	29,926,590	59,103,872	208	3,693,311	7,231,368
Western Div.......	43	8,944,227	17,504,351	32	799,792	1,599,259

SUMMARY, BY STATES, OF ENROLLMENT, ATTENDANCE, SUPERVISING OFFICERS, AND TEACHERS IN CITIES AND VILLAGES OF 4,000 TO 8,000 POPULATION, 1909.

CITIES AND VILLAGES OF—	Number of City and Village School Systems.	Number of Supervising Officers.	Number of Teachers.	Kindergarten Teachers included in Column 4.	Elementary Teachers included in Column 4.	High School Teachers included in Column 4.	All Other Teachers included in Column 4.	Enrollment in Public Day Schools.	Average Daily Attendance.	Enrollment in Private and Parochial Schools.
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
United States	679	2,841	19,439	394	14,609	3,651	785	753,832	596,454	98,990
North Atlantic Division	247	1,056	7,267	161	5,507	1,274	325	266,222	214,542	36,513
South Atlantic Division	59	174	1,362	4	1,086	238	34	66,401	49,291	6,506
South Central Division	73	235	1,672	8	1,297	320	47	77,734	57,498	9,859
North Central Division	263	1,205	7,851	195	5,743	1,573	340	293,362	236,515	39,435
Western Division	37	171	1,287	26	976	246	39	50,113	38,608	6,677

SUMMARY, BY STATES, OF ENROLLMENT, ATTENDANCE, SUPERVISING OFFICERS, AND TEACHERS IN CITIES OF 8,000 POPULATION AND OVER, 1909.

CITIES OF—	Number of City School Systems.	Number of Supervising Officers.	Number of Teachers.	Kindergarten Teachers included in Column 4.	Elementary Teachers included in Column 4.	High School Teachers included in Column 4.	All Other Teachers included in Column 4.	Enrollment in Public Day Schools	Average Daily Attendance.	Enrollment in Private and Parochial Schools.
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
United States	669	10,051	120,469	5,493	96,006	14,983	3,987	4.963,880	3,948,483	1,114,908
North Atlantic Division	269	4,557	58,097	2,850	47,187	6,214	1,846	2,385,148	1,926,515	501,172
South Atlantic Division	52	497	7,577	223	6,139	881	334	333,285	250,944	64,073
South Central Division	69	696	7,237	161	6,014	892	170	322,848	236,824	80,289
North Central Division	232	3,431	38,669	1,974	29,840	5,560	1,295	1,560,611	1,258,665	426,482
Western Division	47	870	8,889	285	6,826	1,436	342	361,988	275,535	42,892

of study leading directly from that of the public elementary schools to the college. Hence the secondary school and college combined cover but little more of the educational field than the secondary schools of France (lycées), or of Germany (gymnasia), or the endowed schools (Eton, Harrow, etc.) of England. In comparative studies it is customary to regard the American high-school course and two years of the ordinary college course as the equivalent of the lycée or gymnasium course.

In High Schools.—Secondary education is also carried on mainly in public schools. On a total of 1,035,000 students in this grade of study 842,000 or eighty-one per cent are in public high schools, and if the number pursuing secondary studies in public normal schools and in the preparatory departments of public universities and colleges be added, the ratio is increased to eighty-three per cent. The education of this great body of students is continued up to seventeen or eighteen years of age at public expense.

It is noticeable that the number of women teachers exceeds the number of men teachers. In the public high schools where boys form forty-three per cent of the student body, women teachers form fifty per cent of the total teaching force. In these statements the elementary divisions of high schools are not included.

Coeducation.—Recent estimates show that ninety-five per cent of the public secondary schools are coeducational, and this is true also of a large proportion of private secondary schools.

Separate high schools for boys and girls are maintained in Boston (the old city), New York City, Philadelphia, Baltimore, Charleston, and New Orleans. In the West the high schools almost universally followed the course of elementary schools in this respect until a very recent date. Recent experiments in segregating the boys and girls, during the first two years of the high-school course, cautiously tried in a few schools, have attracted wide attention; but the weight of opinion seems to be that the special adjustments required by difference of sex can be readily made without reverting to the monastic type of school education. A new element has been introduced into this discussion by the movement for vocational training. So far as can be judged at this incipient stage of the movement, it is likely to lead to the provision of separate schools or departments for boys and girls at the moment when vocational specialization begins.

Three questions relating to the general organization of secondary education have excited attention during the year: that of the relation between colleges and secondary schools; that of a standard measure for secondary education in units of time, applicable to varying courses of study; and that of the adaptation of high-school courses to the needs of students whose formal education is completed at this stage.

The certificate system of admission to colleges already established in the universities and colleges of the Middle West through the support given to it by the North Central Association of Colleges, is gaining favor in the East. The New England College Entrance Certificate Board has given the system recognition in that section, and the Association of Colleges and Preparatory Schools of the middle states and Maryland has established a similar board. Columbia University, which like Harvard, Princeton, and Yale, requires an entrance examination, appointed this year an officer familiar with both college and secondary school, whose entire time will be devoted to the matter of admission and to candidates seeking admission. Through his action the examination test will be supplemented by personal knowledge of the applicant and by an official inspection of the school from which he comes.

With regard to the second question, namely that of a standard or unit of measure for high schools, important action was taken in 1909 by agreement upon a unit at a meeting of representatives of the National Conference Committee on Standards of Colleges and Secondary Schools, in which officers of the Carnegie Foundation participated. "The unit represents a year's study in any subject in a secondary school, constituting approximately a quarter of a full year's work. It takes the four-year high-school course as a basis and assumes that the length of the school year is from thirty-six to forty weeks, that a period is from forty to sixty minutes in length, and that the study is pursued for four or five periods a week; but, under ordinary circumstances, a satisfactory year's work in any subject cannot be accomplished in less than 120 sixty-minute hours, or their equivalent."

The equitable adjustment of college and high-school standards has been furthered the present year by the recommendations of a commission appointed by the American Philological Association as to college entrance requirements in Latin.

The two questions already considered affect the public high schools, particularly, because of the varied demands which they are expected to meet; but they affect also private secondary schools which have shown equal desire to reduce the strain imposed upon them by the varying standards of college admission.

The third question—viz.: that of the adaptation of secondary education to the immediate demands of practical life pertains exclusively to the public high schools, maintained for the people as a whole. It is involved in the larger question of the reorganization or adjustment of the existing systems of education. Experiments at the independent treatment of the minor question, reported during the year, are therefore of interest simply as showing the direction of effort. This is indicated in a recent report on the subject by the New England Association of School Superintendents, chairman, W. A. Baldwin, principal of the state normal school, Hyannis, Mass. Under the head of standardization, this committee says "college standardization seems very valuable, but needing to be balanced up by standardization from two other sources—viz., the local community and the educational authority of the state. The community is already making itself heard, and should be encouraged to continue its demands for practical education. The modifications in curriculum, suggested by the committee, place emphasis upon subjects having to do with the care and development of the body; subjects preparing directly for occupations; and upon subjects pertaining to civics and ethics."

The important facts in secondary education are shown in the following tables.

Although secondary education has been the field of discussion and ex-

PUBLIC HIGH SCHOOLS: NUMBER OF SCHOOLS, SECONDARY INSTRUCTORS- SECONDARY STUDENTS, 1909.

State or Territory.	Number of Schools.	Secondary Instructors.			Secondary Students.		
		Men.	Women.	Total.	Boys.	Girls.	Total.
United States........	9.317	16,969	20,522	37,491	365,512	475,761	841,273
North Atlantic Division...	2,055	4,517	6,624	11,141	120,034	151,154	271,188
South Atlantic Division...	852	1,277	1,306	2,583	21,761	30,039	51,800
South Central Division....	1,011	1,640	1,477	3,117	27,774	39,332	67,106
North Central Division....	4,696	7,937	9 143	17,080	162,737	212,579	375,316
Western Division.........	703	1,598	1,972	3,570	33,206	42,657	75,863

PRIVATE HIGH SCHOOLS AND ACADEMIES: NUMBER OF SCHOOLS, SECONDARY INSTRUCTORS, SECONDARY STUDENTS, 1909.

State or Territory.	Number of Schools.	Secondary Instructors.			Secondary Students.		
		Men.	Women.	Total.	Boys.	Girls.	Total
United States........	1,301	3,662	5,042	8,704	46,495	47,161	93,656
North Atlantic Division...	517	1,788	2,229	4,017	20,837	18,675	39,512
South Atlantic Division...	207	515	643	1,158	7,406	6,634	14,040
South Central Division....	199	459	526	985	7,142	7,038	14,180
North Central Division....	285	638	1,203	1,841	8,674	10,735	19,409
Western Division.........	93	262	441	703	2,436	4,079	6,515

periment during the year, the great body of the schools themselves have been little affected by the agitation. Their number and thorough organization make sudden and radical changes impossible.

School Libraries.—In respect to the material equipment of public high schools, the latest reports show that 8,676 schools have libraries aggregating 5,143,121 volumes, and grounds and buildings of which the approximate value is $223,847,000. Scientific apparatus reported from 7,117 schools has a value of $13,777,000.

Income of High Schools.—The income of 3,722 high schools reported during the year amounted to $19,519,366, of which ninety-three per cent was derived from public appropriations. This proportion would doubtless be increased if the income of all the high schools was known.

The chief support of private high schools and academies is derived from tuition fees and charges for board, etc.; 877 schools of this class report property valuation amounting to $63,580,000; 187 schools report productive funds to the amount of $705,817.

Of the high schools, 810 or 8.7 per cent of the total number, are in cities of 8,000 population and over. The city schools employ 14,500 teachers, thirty-eight per cent of the total, and in 1909 enrolled 400,129 pupils, or forty-seven per cent of the total number. Of the entire number of city schools, 308 are in the north Atlantic states and 278 in the north central.

The number of schools maintaining the typical four-year course is 5,920; these employed during the year 31,758 teachers, or eighty-four per cent of the total force, and enrolled 740,904 pupils, or eighty-eight per cent of the total.

The remaining 3,397 high schools, enrolling 100,369 secondary students, have less than four years in the course, and represent adjustments either to local conditions or special demands.

Two questions of paramount importance arise in view of the large public provision for this work: (1) What does it lead to? (2) What proportion of the students who enter the high school pursue their studies to the end?

The first of these questions is answered by the classification of secondary pupils, which is as follows:

	Public High Schools.	Private High Schools and Academies.
Total number of secondary students	841,273	93,656
Per cent in college classical preparatory	3.31	10.36
Per cent in college scientific preparatory	2.71	9.14
Per cent of total number graduating in 1909	11.95	12.68
Per cent of graduates prepared for college	34.67	42.53

The second question is answered by the fact already stated, that of pupils entering the first grade of the elementary school, only thirteen per cent finish the four-year high-school course.

The statistics of school population show that the number of boys of school age is slightly in excess of the number of girls. This gives peculiar significance to the fact that fewer boys than girls enter the high schools, and much fewer graduate. In 1909 the relations were as follows: Of the total number of high-school pupils, 43.4 per cent were boys, 56.6 per cent were girls; of the total graduates, 100,496, 38 per cent were boys, 62 per cent were girls.

HIGHER EDUCATION

Higher education is the province of universities, colleges, and technological schools, which number at present 606, including 144 institutions for men only, 349 for both men and women, and 113 exclusively for women. Whereas the terms university and college were formerly used in this country almost interchangeably, the distinction between the two classes of institutions is becoming more clearly defined; and it is now generally true that universities unite in one organization a college department, provision for extensive graduate instruction, and specialized departments for professional and technical education. Colleges, on the other hand, confine their work to undergraduate and graduate departments. A large proportion of these higher institutions, especially in the South and West, have preparatory departments. These are generally organized with their own corps of instructors, and their students have already been included in this review under the head of secondary education.

Of the 606 institutions eighty-nine are supported chiefly by state, city, and Federal appropriations, and are under public control; the remaining 517 are supported by private endowments, tuition fees, etc., and are under private control. The eighty-nine public institutions had 62,972 students in their collegiate departments and 280 in their graduate departments, a total of 65,779, or thirty-six per cent of all students registered in these two departments. The men students numbered 49,218 against 16,561 women, or about three to one. The 517 private institutions enrolled 117,565 students (70,997 men and 46,568 women), or sixty-four per cent of the total student body.

The following table shows the scope of the scholastic work and the equipment in instructors of the higher institutions, exclusive of those for women only:

INSTRUCTORS AND STUDENTS, BY DEPARTMENTS, IN UNIVERSITIES, COLLEGES, AND TECHNOLOGICAL SCHOOLS

Geographical Divisions.	Professors and Instructors.				Students.						
	Preparatory Departments.	Collegiate Departments.	Professional Department ments.	Total Number (excluding Duplicates).	Preparatory Departments.	Collegiate Departments.	Graduate Department.		Professional Departments.	Total Number (Excluding Duplicates).	Number of Institutions
							Resident.	Non-Resident.			
United States...	3,990	13,848	6,507	23,683	64,001	153,226	8,582	867	37,149	280,209	493
North Atlantic Div.	651	4,246	2,113	7,022	10.287	43,997	3,356	456	10,561	70,761	91
South Atlantic Div.	482	1,522	634	2,416	7,979	14,534	579	45	4,089	27,055	82
South Central Div.	543	1,275	921	2,584	11,690	13,898	241	50	6,099	33,162	77
North Central Div.	1,839	5,307	2,307	9,258	27,876	65,287	3,621	300	14,525	123,438	197
Western Div......	475	1,498	532	2,403	6,169	15,510	785	16	1,875	25,793	46

Of the total receipts, $76,650,969, students' fees provided only twenty-five per cent.

From detailed particulars of the 493 institutions for men and for both sexes, it appears that 192 have less than 100 undergraduate students each; 233 have between 100 and 500; thirty-five have between 500 and 1,000; thirteen have from 1,000 to 1,500, and twenty exceed this last number. The second and third groups are made up for the most part of colleges which confine themselves to undergraduate work. They form, as it were, regional centers of liberal education with emphasis on the humanities or on scientific training required as a basis for the technical professions.

In this statement exception should be made of the few state universities included in the number. These are rapidly expanding, and at any moment may, by a slight increase in students, pass over into the upper group, and they have at present provision for the higher orders of technical and professional training.

Although the number of students alone is not an adequate measure of the quality of an institution, it may be inferred that the most forceful of the small colleges of this country are found in the second and third groups, and that the institutions which, measured by world standards, are the most important, are found in the last group.

Growth of the Larger Institutions.—There is a strong tendency of students toward the larger institutions; thus it appears that of 153,206 undergraduate students forty-four per cent are in the institutions having above 1,000 students. Apart from the social influences which draw young men together, this tendency is explained by free tuition in some cases, the larger range of electives, oppor-

PROPERTY OF UNIVERSITIES, COLLEGES, AND TECHNOLOGICAL SCHOOLS FOR MEN AND FOR BOTH SEXES.

GEOGRAPHICAL DIVISIONS.	Number of Fellowships.	Number of Scholarships.	Libraries.		Value of Scientific Apparatus, Machinery, and Furniture.	Value of Grounds.	Value of Buildings.	Productive Funds.
			Volumes.	Value.				
United States	658	10,398	13,338,230	$21,450,810	$33,756,034	$67,161,996	$219,997,873	$260,736,256
North Atlantic Division	299	4,815	5,657,709	9,363,330	11,027,145	22,492,080	95,753,067	126,627,883
South Atlantic Division	46	1,879	1,365,237	2,827,590	3,834,951	9,434,987	26,523,304	13,298,919
South Central Division	69	932	842,076	1,135,734	2,597,235	6,249,421	14,763,654	14,866,263
North Central Division	221	2,546	4,507,976	6,547,799	13,449,964	20,120,905	66,322,316	71,262,791
Western Division	23	226	965,232	1,576,357	2,846,739	8,864,603	16,635,532	34,680,400

INCOME OF UNIVERSITIES, COLLEGES, AND TECHNOLOGICAL SCHOOLS FOR MEN AND FOR BOTH SEXES.

GEOGRAPHICAL DIVISIONS.	From Student Fees.	From Productive Funds.	FROM STATE OR CITY.		From United States Government.	FROM PRIVATE BENEFACTIONS.			From All Other Sources.	Total Receipts.
			For Increase of Plant.	For Current Expenses.		For Increase of Plant.	For Endowment.	For Current Expenses.		
United States	$19,178,953	$10,948,702	$6,055,965	$10,414,780	$4,261,030	$3,354,090	$10,820,401	$2,523,486	$9,055,039	$76,650,969
North Atlantic Division	8,229,376	5,105,917	560,175	1,467,770	1,378,484	1,043,430	5,306,740	1,176,723	5,760,234	30,028,849
South Atlantic Division	1,855,095	677,229	330,325	894,466	1,107,194	295,146	1,107,227	157,131	375,243	6,799,056
South Central Division	1,658,796	646,132	552,331	802,506	401,539	188,168	234,924	198,764	644,858	5,328,018
North Central Division	6,640,017	3,187,857	3,499,678	5,435,720	702,813	1,486,589	3,573,376	766,856	1,674,958	27,006,387
Western Division	795,669	1,331,567	1,113,456	1,814,318	671,000	340,757	598,134	224,012	599,746	7,488,659

tunities of combining undergraduate with professional study, and the fuller provision for technical training which characterize the larger institutions. The equipment for science and its practical applications requires enormous and ever-increasing expenditure, and hence the university of the present time is inevitably measured in terms of money value.

There are only seven institutions in the country with endowments exceeding $10,000,000 each, and only thirty-seven additional institutions with endowments between $1,000,000 and $9,000,000. To this number may be added a few state universities which may command at will, as it were, greatly increased appropriations from their respective state legislatures. Practically, there are at least ten institutions of higher learning of the first magnitude in this country, and about thirty others that are well equipped for modern requirements.

Distribution of Students.—The distribution of students in the principal collegiate schools or courses leading to a degree, as reported in 1909, was as follows:

Schools or Courses.	Number of Students.		
	Men.	Women	Total.
Classical	24,539	10,808	36,347
General science	11,258	3,378	14,636
Agriculture	6,329	181	6,510
Engineering	31.717	31	31,748
Education	2,741	4,513	7,224
Commerce	4,673	732	5,005
Household economy	27	3,289	3,316
Music	1,475	5,393	6,868
Fine arts	732	1,480	2,212

Degrees.—The wide departure from the old unified collegiate courses is further indicated by the diversity of degrees conferred. In 1909 the number of students obtaining the bachelor's degree was 20,438 (12,992 men, 7,346 women). This total included fourteen different diplomas of which the A.B. led with 11,811 recipients; the B.S. follows with 5,419 recipients. The Master's degree included eleven different orders, the A.M. leading with 1,793 recipients.

Doctor of Philosophy.—It is interesting to note that the degree of Doctor of Philosophy, which was for a while discredited by its too free award, has recovered significance as the sign of a high order of attainment. In 1909 it was secured by 424 graduate students on the results of examination, and conferred upon three persons, *honoris causa* with strict regard to high merit. The doctorates in science numbered 189 in 1909, all conferred upon the results of graduate work completed in each case by a thesis or other proof of capacity for original investigations.

The growing sense of the meaning and purpose of higher education as a factor in national life is indicated by the recent adverse criticism of its forms and prevailing tendencies. In the present year criticism has been replaced to a degree by constructive measures, the work mainly of the associations formed by the voluntary union of higher institutions. The National Association of State Universities, at its fourteenth annual conference held in Oct., 1909, and the Association of American Universities, at its eleventh conference held in Madison, Wis., Jan. 4 and 5, 1910, adopted uniform nomenclatures covering the main divisions of university work. This action, together with the general agreement as to scholastic standards, provides the essential conditions of a consistent system, but without rigid uniformity.

The reaction against unrestricted electives has become a well-defined movement toward what Pres. Lowell calls "the new solidarity." This is marked in respect to Harvard University by the adoption of new rules for the choice of electives in the faculty of arts and sciences. The rules which take effect the present year practically substitute a group system for free electives.

An interesting feature of the year's record was the inauguration of newly appointed presidents in several colleges and universities. The most notable of these ceremonies were as follows: Inauguration of Dr. William A. Shanklin as ninth president of Wesleyan University, Middletown, Conn., on which occasion Pres. Taft delivered one of the congratulatory addresses; the installation of Dr. Ernest Fox Nichols as tenth president of Dartmouth College, Hanover, N. H., which was made memorable by the participation of the British ambassador, Hon. James Bryce; and the inauguration of Dr. Abbott Lawrence Lowell as twenty-fourth president of Harvard University, Oct. 6, 1909. On this occasion delegates were present from 31 foreign universities and from 167 institutions of the United States.

[Brief sketches of the new college and university presidents appear at the end of this Department of the YEAR BOOK.]

COLLEGES FOR WOMEN

The 113 colleges for women include (1) sixteen institutions which are organized on practically the same basis as the colleges for men—they require the same standards for admission, and offer substantially the same courses of undergraduate study; (2) ninety-seven colleges which offer college courses leading to degrees and special or partial courses. The salient particulars with reference to these institutions are given in the following summaries:

STUDENTS IN COLLEGES FOR WOMEN.

GEOGRAPHICAL DIVISIONS.	Group A.					Group B.			
		Number of Students.					Number of Students.		
	Number of Colleges.	Preparatory.	Collegiate.	Graduate.	Total Number.	Number of Colleges.	Preparatory.	Collegiate.	Total Number.
United States.......	16	142	8,264	194	8,610	97	6,691	12,211	19,344
North Atlantic Division..	10	0	6,851	188	7,039	....	534	892	1,426
South Atlantic Division .	3	0	878	4	882	....	2,344	5,506	8,127
South Central Division...	1	105	277	....	392	....	2,345	4,220	6,589
North Central Division..	1	37	142	2	181	....	1,468	1,593	3,202
Western Division.......	1	0	116	0	116	....	....	....	....

The majority of the collegiate students, at least sixty-two per cent in all colleges for women, are in the classical and general scientific courses or departments. The distribution of students in the additional courses is as follows: education, 3 per cent; household economy, 2.2 per cent; music, 24 per cent; art, 6 per cent.

The following additional particulars relative to the above colleges were reported for the scholastic year 1908–09:

The sixteen colleges in Group A had 942 professors and instructors (358 men, 584 women); their property valuation was $30,428,965, and their total receipts for the year $4,227,362. Of the last amount sixty per cent was derived from student fees (board and tuition); fifteen and one half per cent from productive funds, and the remainder from gifts, private benefactions, etc.

The ninety-seven colleges in Group B reported 1,744 professors and instructors (301 men, 1,443 women); their property valuation was $15,222,402, and their receipts for the year aggregated $3,090,445, of which eighty-one per cent was derived from student fees (board and tuition).

The degrees conferred by the colleges for women are included in the total already given. Of 1,539 degrees conferred by the colleges of Group A 1,423 were bachelor of arts. Of the 942 degrees conferred by the colleges in Group B bachelor of arts counted 529 recipients, bachelor of science 119, and bachelor of letters 226.

AGRICULTURAL AND MECHANICAL COLLEGES

The agricultural and mechanical colleges endowed by the land grant of 1862 with substantial increase from subsequent appropriations by congress, form a special feature of the public provision for education in this country. Through all developments these colleges have preserved the close relation to the public schools contemplated in the original act. Several have become organic parts of state universities, others have assumed, temporarily at least, the character of normal schools, and a few of the number, including those for the colored people of the South, are classed with secondary schools. Statistics pertaining to the colleges in question are, therefore, included under other headings. By reason, however, of the provision in the "continued appropriation" acts of 1890 and 1907, requiring an annual report to the Secretary of the Interior, upon whom devolves the distribution of the said appropriations, the separate record of the work and progress of these institutions has thus far been maintained.

The latest summary drawn from the formal reports referred to brings this record to July 1, 1909. The colleges enrolled at that time 72,865 students, including 6,766 in the sixteen separate institutions for colored students, which, as a rule, do not maintain college standards.

The relation of the scholastic work of these colleges to the industrial arts specified in their title, and to the general educational work of the country is indicated by the distribution of their students.

Courses.	1909.
Agriculture, four year college course*	5,873
Domestic science, four year course	1,443
Mechanic arts, four year course	17,435
Short and special courses	11,203
All departments	72,865

* Does not include agriculture in colored schools.

The following tabular statement shows the proportion of students enrolled in the several courses in 1905 and 1909:

Courses.	1905.	1909.
	Per cent.	*Per cent.*
Agriculture	4.50	8.06
Domestic science	1.30	1.98
Mechanic arts	23.65	23.96
Short and special courses	9.33	15.37
All other departments	61.22	50.63

The short courses form a part of the extension system to which great impetus has been given during the past year, as already noted. Through this popular instruction the agricultural colleges, it is believed, will make a distinctive contribution to public education.

Extension Work.—Under the recent impulse the colleges of agriculture and mechanic arts are providing for various forms of extension work which were placed on a solid basis by the action of the Association of American Agricultural Colleges and Experiment Stations, taken at the twenty-third annual conference which was held at Portland, Ore., in Aug., 1909. On that occasion the association, by an amendment to the constitution, created a third section, the section of extension work, on equal footing with the two sections previously existing.

The committee on extension work recommended that there be organized in each land-grant college a thoroughly equipped department for extension work conducted according to a prescribed plan. In order to provide more liberally for this new feature, the committee recommended an appropriation of $10,000 a year from the National Treasury to each state and territory to be applied to this purpose.

An act of the Virginia legislature, March 17, 1910, provides for a united agricultural board to coördinate the agricultural institutions and agencies for the betterment of agricultural, experimental, and demonstration work, and to advance generally agricultural interests throughout the State.

Georgia State College of Agriculture has now $14,000 a year available for the department of extension work. Five men give their entire time to this service, which is organized under a special director. Fourteen movable schools of agriculture were held in April and May, 1910, with an average attendance of ninety. These schools were of three days' duration, but in the future will be six days each. In short, all the agricultural colleges have become in some measure the unifying and directive center of agricultural instruction and the work of rural uplifting throughout their respective states.

The fourth session of the graduate school of agriculture, under the auspices of the Association of American Agricultural Colleges and Experiment Stations, was held at the Iowa State College, Ames, Iowa, July 4–29, 1910. The program offered advanced courses in plant physiology and pathology, agronomy, horticulture, animal husbandry, rural economics, dairying, poultry, and rural engineering, given by a faculty of fifty-three men selected from the specialists in the agricultural colleges, experiment stations, and Department of Agriculture, together with specialists from Harvard University, University of Pennsylvania, Carnegie Institution at Washington, D. C., Ontario Agricultural College, the Royal Imperial Agricultural College of Vienna, and the University of Edinburgh, Scotland. The school is in the immediate charge of a committee on graduate study of the association. The dean of the school is Dr. A. C. True, director of the office of experiment stations, United States Department of Agriculture.

The movement for agricultural training is in fact creating a new order of technical professions, and the older universities of the country are already making provision for students inclined to these careers.

Income.—The total income of the agricultural and mechanical colleges from all sources, excluding the Federal appropriations for experiment stations, for the year ending June 30, 1909, was $18,595,893, an increase of $319,296 over the income for 1908. The sources of income with the amount from each for the year ending June 30, 1909, are as follows:

SOURCES OF INCOME.	1909.	
Income from endowment granted by state	$98,353	
Appropriations for current expenses	3,723,992	
Tax levy for current expenses	2,559,995	
Appropriations for buildings or other special purposes	3,488,767	
Tax levy for buildings or other special purposes	715,171	
Total state aid		$10,586,278
From land grant in 1862	763,275	
From other land grants	161,791	
From additional endowment, acts of August 30, 1890, and March 4, 1907	1,750,000	
Total federal aid		2,675,066
From other endowment funds		783,719
Tuition fees		1,136,631
Incidental fees		1,023,336
From miscellaneous sources		2,390,863
Total income		$18,595,893

PROFESSIONAL SCHOOLS

Theological Schools.—Provision for higher education in this country is completed by the professional schools. Many of these are departments of universities and consequently their financial statistics are involved with those of other departments. The reports are full enough, however, to make it evident that theological and medical schools have high property valuation, that of the former being estimated at $20,000,000, and that of the medical schools at $13,000,000. In regard to endowment funds, theological schools are favored above all others. The 162 schools of this class have over $32,000,000 productive funds, and the benefactions bestowed upon them during the past year amounted to $1,180,000, which is three and a half times as great as the amount received by any other class of professional schools. Both theological and law schools have extremely valuable libraries.

The principal statistics relating to the student body, instructors, property valuation, income and benefactions of the institutions here considered, as reported in 1909, are shown in the following table:

Class of Professional Schools.	Schools.	Instructors.	Students.	Graduated in 1909.	Per cent Graduated.	Students having College Degree. *a*
Theological	162	1,350	*b* 10,218	1,775	17	3,335
Law	109	1,343	*c* 18,553	3,751	20	4,023
Medical	144	7,957	22,158	4,484	20	1,605
Dental	55	1,609	6,178	1,778	29	101
Pharmaceutical	78	802	5,999	1,640	27	78
Veterinary	19	373	2,677	590	22	60

Class of Professional Schools.	Value of Grounds and Buildings.*a*	Endowment Funds.*a*	Benefactions Received.*a*	Total Income.*a*
Theological	$19,766,100	$32,024,000	$1,183,500	$3,119,300
Law	3,169,500	808,100	356,800	1,191,300
Medical	12,583,981	3,468,734	251,632	1,843,518
Dental	1,333,031	....	6,000	440,293
Pharmaceutical	914,500	252,278	7,400	236,920
Veterinary	907,000	....	25,000	187,774

a So far as reported. *b* 412 women are included. *c* 188 women are included.

Standard Medical Education.—At the annual meeting of the American Medical Association, held in St. Louis, June 6–10, 1910, the council on medical education presented its report of an extended investigation of the medical colleges of the United States and Canada. The report adopts as the definition of a medical college that given in the revised ordinance of the State of New York, and which has also been adopted by the Carnegie Foundation as their standard, and for the definition of a medical school that adopted by the Association of American Universities. As a result of the inspection, the council arrived at a classification of the medical schools on a basis of rating which will enable every school to ascertain its relative status. While admitting the deficiencies of a certain proportion of the schools visited, the council expresses the belief that the coming American standard of medical education will be a four-year high-school education; a year or two in the university laboratories of chemistry, physics, and biology; four years in the medical school, and a clinical year as interne in a hospital. Forty-seven medical colleges have adopted even higher entrance requirements than those specified, while thirty-one colleges require on the part of their graduates, at least, one clinical year as interne in a hospital.

The Association of American Medical Colleges at its annual meeting held in Baltimore, March 21–22, 1910, indorsed the combined baccalaureate and medical course now given by many universities, and also the concentration plan of teaching. (See XXVIII, *Medicine and Hygiene.*)

A New Degree.—At a meeting of the Harvard Corporation, June 28, 1910, it was voted to establish a degree of doctor of public health, to be conferred in accordance with specified regulations. Candidates for this degree should first have the degree of M.D., or otherwise be properly qualified.

The advancing standard of medical education in this country, combined with the unusual facilities for research afforded by independent laboratories, is attracting world-wide attention. A well-known European authority has recently declared that "there are subjects (surgery and the practical sciences in particular) which can be studied nowhere else with so much profit as in certain institutions of the United States."

The Law Schools.—The Association of American Law Schools, in its sixty-ninth annual meeting held the present year, adopted the report of the committee on prelegal studies with recommendations looking to marked advance in the standards of admission to law courses, and extended preliminary study of political economy, political science, sociology, and other special courses.

The board of overseers of Harvard University voted during the year to establish the degree of Doctor of Law (jurist doctor) to be conferred upon graduate students who, after obtaining the degree of Bachelor of Law, complete an additional year of work under the regulations of the faculty. (See V, *Law and Jurisprudence.*)

THEOLOGICAL SCHOOLS

The most important fact in the recent history of theological schools is the very general establishment of courses of training in practical ethics and sociology, including under the latter term settlement work, problems of crime, of mental, and moral degenerates, etc.

At the seventh general convention of the Religious Education Association held at Nashville, Tenn., March 8–10, 1910, the report of a committee on pretheological education, appointed at the previous meeting of the association, was presented and adopted by the department of theological seminaries.

The courses recommended by the committee included under the head of social sciences, history, political economy, study of society (introduction to the study of sociology, dependents, etc.).

EDUCATION IN THE OUTLYING POSSESSIONS

Porto Rico and the Philippines.—This review has dealt almost exclusively with the general educational provision for the people of the United States. Reference should also be made to the important work carried on in behalf of alien and dependent peoples in the outlying possessions. In Porto Rico and the Philippines a system of public instruction is being developed under the auspices of the government, although the direct administration of the same devolves upon departments organized within the islands themselves. The experiment of adapting modern educational methods and standards to these undeveloped or dissimilar peoples has become an object of attentive regard to all nations burdened with similar responsibilities.

Alaska.—The work of educating the natives of Alaska is intrusted directly to the Department of the Interior, which exercises this function through the bureau of education. Under this direction a system of training has been developed which aims alike at the industrial and the moral improvement of the natives. In addition to the stress placed upon instruction in manual and domestic arts, practical training in home and village sanitation is conducted through the combined action of physicians and teachers selected with great care and maintained at government expense. The Alaska reindeer service bears the same relation to the industrial education of this people that the experimental farms bear to the training of an agricultural people, and, as organized and restricted, is securing to the natives of this territory an industry of great value, and also an incentive to ambition and enterprise by the opportunity afforded individuals of becoming property owners. Under this system, about 4,000 native Alaskans are receiving instruction in eighty-one schools, distributed over an area of 580,000 square miles. The schools are under the general direction of six district superintendents, and employ a force of 104 teachers, five physicians, and four nurses. As integral parts of this work there are thirty-two reindeer stations. This system is maintained at an annual expenditure of $200,000 for the educational work, including office expenses, and $12,000 for the reindeer service.

Lake Mohonk Conferences. — The humanitarian spirit in which the work of racial education is carried on by the government has been stimulated by the annual meeting of the Lake Mohonk conference of friends of the Indian and other dependent peoples; the world bearings of the work are emphasized, at this moment, by the preparations for a congress of races to be held in London the coming year.

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LIBRARIES

ARTHUR E. BOSTWICK

Library Progress.—The public library is widening its field in all parts of the country, and is tending more and more to become a social as well as an intellectual center, especially in small communities. Some of the activities recently assumed by libraries, and connected only indirectly with the distribution of literature, are the provision of lectures, story-telling to children, the organization of boys' and girls' clubs, exhibitions in art or natural history, and the giving of aid in various kinds of business and occupations. Effort is made to secure the widest possible distribution of books, especially through branches and traveling libraries. The New York Public Library circulates about 7,000,000 books through its branches and over 1,000,000 through traveling libraries.

Associations.—The American Library Association, with 2,005 members, as against 1,835 in 1909, held its annual conference at Mackinac Island, Mich., from June 30 to July 6, 1910, under the presidency of N.

D. C. Hodges, Librarian of the Cincinnati Public Library. J. I. Wyer, Jr., Director of the New York State Library, was chosen president for the ensuing year. The association has an active publishing board, five organized sections and three affiliated organizations which meet with it, of which one, the "Special Libraries Association," is new. This has gathered together a large number of libraries organized for special purposes, especially by companies, associations, and business houses.

There are now also thirty-eight state library associations, meeting once or twice a year, and twenty-five local library clubs, meeting usually every month.

Commissions.—Library commissions or committees constituted by law, now exist in thirty-four states of the Union. They collect statistics, assist in the organization of new libraries, give aid and advice to librarians and trustees, publish library periodicals occasionally, and manage state-wide systems of traveling libraries, besides, in some instances, inspecting libraries and distributing state money among them. The work of the "organizers" employed by some of the commissions reaches out into neglected districts, and is becoming a potent influence in rural improvement.

Library Training.—There are now eleven library schools in the United States, connected with universities, large libraries, or with the work of state commission. Some of these admit only holders of a B.A. degree. Besides these, there are several summer schools, chiefly for library assistants, and a considerable number of local training classes, intended to fit applicants for the work of the particular library where they are held. The individual apprentice system is also kept up in some places, but the tendency is to systematize it by the formation of classes.

New Buildings.—Large buildings under construction are those of the New York Public Library, to be completed probably in 1911, the St. Louis Public Library, about 1912, and the New York State Library. Plans for a new central building for the Detroit Public Library are under way. The only library of considerable size opened during the year was that at Denver, Col.

The principal changes in construction are those due to the wide adoption of the open-shelf system and the use of the electric light, rendering natural light for book-stacks unnecessary. In some large buildings, notably that of the State Library at Albany, the stack is being placed in the center, leaving light on all sides for reading rooms and offices.

Interlibrary Loans.—Libraries are lending books to persons at a distance, with more freedom than formerly. This is generally done through the local library, the person benefiting by the transaction paying the expenses of transportation. Very valuable works and books in constant use, such as genealogies, are not generally lent in this way. Probably this work will be systematized in the near future, and much needless duplication of expensive works by neighboring libraries will be thereby saved. Effort is being constantly made to secure reduced postage for books in interlibrary transit, but so far without success.

Work with Schools.—Schools and public libraries, recognizing that education is their common aim, are coming into closer relationship. Several libraries have organized departments to care for their school work and others have placed it under the same superintendence as their work with children. The National Educational Association has had a library section for several years, and an effort to discontinue this in 1910 was unsuccessful.

Librarians.—Several changes have taken place among the chief officers of the larger libraries, some of which are: the retirement, owing to impaired health, of Frederick M. Crunden, of the St. Louis Public Library, one of the pioneers of advanced library work in the United States, and the appointment of Arthur E. Bostwick to fill his place; the resignation of Frederick B. Held, of the Chicago Public Library, and the appointment of Henry E. Legler; and the resignation of Charles F. Lummis and the appointment of Purd B. Wright at the Los Angeles Public Library.

THE AMERIKA INSTITUT OF THE GERMAN GOVERNMENT

HUGO MÜNSTERBERG

The Institut, which originated with the late Dr. Friedrich Alshoff, director of education, was formally organized in Oct., 1910, with Dr. Hugo Münsterberg, of Harvard, as its first director in an honorary capacity during the year of his exchange professorship at Berlin University. Its financial support comes from contributions chiefly from the banking house of Koppel, in Berlin, and Mr. James Speyer, of New York.

The Institut has been founded for the furthering and strengthening of all cultural relations between Germany and the United States. It has been arranged that the whole exchange of American and German books between the Smithsonian Institution at Washington and the German libraries, publishers, etc., shall pass through the Institut, superseding the bureau in Leipsic, which the American Government has supported. The Institut will further undertake the arrangements for the copyrights of German books in America, and will take care that important German books find translation in America and that American books are translated into German. It will stimulate the circulation of American books and periodicals in Germany. It will have its own library for the study of America and American problems. The Institut is to inform and advise the German universities, technical schools, etc., with regard to the value of the degrees and education of all American visitors. American scholars and institutions anxious to come in contact with German individual scholars or institutions, libraries or laboratories, museums or hospitals, archives or state bureaus, will be aided, and correspondingly Germans who for scholarly reasons seek similar American relations. It will aid international enterprises of research, and be helpful in the preparation of international congresses, expeditions, publications, statistics, and exchanges, and in all educational problems serve as a medium of correlation between the two countries.

This work will be supplemented by similar efforts in the field of literature and art, of social welfare and law, of industry and technic, thus making the Institut a clearing house for cultural effort. It is hoped that the Institut may become a model for similar enterprises in other countries, the ideal aimed at being the establishment of a whole system of such institutes all over the world, through which the cultural international work of the nations may be systematically organized, as politics and commerce are shaped in international relations.

University of Berlin.—On Oct. 12th the one hundredth anniversary of the University of Berlin was celebrated, the most notable feature of the exercises being the address by Emperor Wilhelm, who announced that the work of the university would be broadened further by a foundation for scientific research, and that he had collected from private individuals nearly $2,250,000 for the endowment of the school for research. Addresses of congratulation were made by Pres. Hadley, of Yale, who spoke for the American delegation, and emphasized the great obligations of the United States to German scholarship. He bore testimony to the definite influence for good of the international exchange of professors.

NEW COLLEGE PRESIDENTS

MARCUS BENJAMIN

During recent years there have been many important changes in the presidential chairs of our leading colleges, and, with the coming of new men, new ideas on methods of education follow.

Harvard.—The first of these to be considered is naturally Abbott Lawrence Lowell, who succeeded Charles W. Eliot as president of Harvard University on May 19, 1909. Pres. Lowell was born in Boston in 1856, and was graduated from Harvard in 1877, after which he studied law. He followed that profession until 1897, when he returned to his Alma Mater, first as lecturer and then as professor of the science of government. His activities in the social, political, and intellectual life of his native city soon gained for him deserved prominence, which became more conspicuous in consequence of his books on *Government and Parties in Continental Europe* (1896), *The Influence of Party upon Legislation in England and America* (1902), and *The Government of England* (1908), which are accepted as authoritative. Williams, Columbia, Princeton, Yale, and Dartmouth have conferred upon him honorary doctorates.

The Massachusetts Institute of Technology called to its administration during 1909 Richard Cockburn Maclaurin, who was born in Lindean, Scotland, in 1870. He was educated at Cambridge, England, where he was Smith prize man in mathematics in 1897, and Yorke prize man in law in 1898. Returning to New Zealand, where he received his early training, he became professor of mathematics in the University of New Zealand until 1905, and then for two years was dean of the faculty of law in that institution. Columbia, in New York, called him to the chair of mathematical physics in 1907, where he continued until his election to the Institute of Technology. He is a fine student and "brilliant experimenter," as is shown by his many scientific memoirs, chiefly on light, that have been published in the *Philosophical Transactions* of the Royal Society of London and other similar journals. Besides his *Title to Realty* (1900), he is the author of a series of *Lectures on Light* (1909). Cambridge, England, Wesleyan, and Dartmouth have given him honorary doctorates.

Wesleyan called to its presidency in 1909 William Arnold Shanklin, who was born in Carrollton, Mo., in 1864. He was graduated from Hamilton in 1883, and after studying at Garrett Biblical Institute he was ordained in the Methodist Episcopal ministry in 1889. His first pastorate was in Spokane, Wash., and he held others, first in the West, and last, in 1905, in Reading, Pa., whence he was called to the presidency of Upper Iowa University, Fayette, Ia., in 1905. Four years later he was chosen as president of Wesleyan. Washington, Baker, Upper Iowa, and Trinity at Hartford have conferred upon him their honorary doctorates.

Clark College.—As the successor to Carroll D. Wright there has been called to Clark College, Edmund Clark Sanford, who was born in Oakland, Cal., in 1859. Pres. Sanford was graduated at the University of California in 1883, and then studied at Johns Hopkins, where he received his Ph.D. in 1888. In 1889 he was called to Clark, where he was successively instructor, assistant professor, and then professor of experimental and comparative psychology. He has been president of the American Psychological Association, and is the author of many papers on his specialty.

Smith College. — In Sept., 1910, Marion LeRoy Burton, who was born in Brooklyn, Ia., in 1874, assumed his duties as president of Smith College in Northampton, Mass. He was graduated at Carleton in 1900, and studied at the Yale Divinity School, receiving the degree of Ph.D. in 1907 for post-graduate work. Meanwhile, after teaching at various institutions, he was in 1905 ordained in the Congregational ministry, and during 1908–09 was pastor of the Church of the Pilgrims in Brooklyn, N. Y. He is the author of *The Problem of Evil* (1909), and Carleton gave him in 1909 the degree of D.D.

Dartmouth.—Ernest Fox Nichols, who has been president of Dartmouth since June, 1909, was born in Leavenworth, Kan., in 1869. He was educated at the Kansas Agricultural College (graduating in 1888), Cornell, and abroad at Cambridge and Berlin, where he specialized in physics. In 1892 he accepted the chair of physics in Colgate, whence he passed to Dartmouth in 1898, and then to Columbia in 1903. His brilliant work in his chosen specialty, notably on the delicate movements of heat and light, have brought him an election to the National Academy of Sciences, and the Rumford medal of the American Academy of Arts and Sciences. Clark, Colgate, and Wesleyan have given him the degree of LL.D.

University of Maine.—The University of Maine has recently called to its presidency Robert Judson Aley, who was born in Coal City, Ind., in 1863. He was educated at Indiana University and at Stanford University, where during 1894–95 he was acting assistant professor of mathematics. More recently he has had editorial charge of the *Educator-Journal*, and he is the author of many mathematical papers.

Barnard College.—Virginia Crocheron Gildersleeve was recently appointed dean of Barnard College. She is the daughter of ex-Supreme Court Justice Henry A. Gildersleeve, and was born in New York City in 1877. She was educated at the Brearley School and at Barnard College, where she was graduated in 1899. In 1900 she received the degree of A.M. from Columbia University, and in 1908 the degree of Ph.D. She was assistant Professor of English at Barnard College at the time of her appointment, and is the author of *Government Regulation of the Elizabethan Drama*, published in 1908, and various magazine articles. She is a member of Phi Beta Kappa, of the College Settlements Association, and the Kappa Kappa Gamma Fraternity. Miss Gildersleeve has the distinction of being the only woman instructor at Barnard who has given regular instruction at Columbia University. She gives a course in English versification at the university in exchange for work done by a Columbia professor at Barnard. On the Barnard faculty she is one of the original members of the Committee on Instruction.

Colgate University.—Elmer Burritt Bryan, the new president of Colgate University at Hamilton, N. Y., was born in Van Wert, Ohio, April 23, 1865. He was graduated at Indiana University in 1893, and later pursued graduate studies in Harvard and Clark. From 1882 till 1896 he taught in various common and high schools in Indiana, and from 1896 till 1901 was professor in Butler and then in Indiana University, returning to the chair of educational and social psychology in the latter in 1903, after spending two years in the Philippines in higher educational work. In 1905 he became president of Franklin College, which place he resigned in 1909 to accept the presidency of Colgate. He is the author of *The Basis of Practical Teaching* (1905) and *The Larger Life* (1909).

Pennsylvania College has recently called to its presidency William Anthony Granville, who was born in White Rock, Minn., in 1863. He was educated at the Sheffield Scientific School of Yale, where in 1897 he received the degree of Ph.D., and since has continued at Yale in the department of mathematics until his acceptance of the call to Gettysburg. Dr. Granville is the author of several valuable treatises on mathematics, including a *Calculus* (1905), a *Trigonometry* (1909), and *Logarithmic Tables* (1909).

University of Pennsylvania. — In worthy recognition of long years of faithful service, the trustees of the University of Pennsylvania on Nov. 15, 1910, advanced Edgar Fahs Smith to the high office of provost of that institution. Dr. Smith was born in York, Pa., in 1856, and was graduated from Pennsylvania College in 1874, after which he studied chemistry in Göttingen, gaining his Ph.D. in 1876. On his return to the United States he joined the teaching force of the University of Pennsylvania, where (with the exception of the years 1881–88, when he filled the chair of chemistry in Muhlenberg and then at Wittenberg) he has since remained, becoming head professor of chemistry in 1888, and more recently vice provost. His high standing as a chemist and as a scientist is shown by his services as an advisor in his chosen specialty to the Carnegie Institution since 1902, his election to the presidency of the American Chemical Society in 1898, and to the American Philosophical Society in 1902, and his admission to the National Academy of Sciences in 1899. He has made a specialty of electrochemistry, in which field he is the foremost authority in this country, and on which subject he has written several text-books. Wisconsin, Pennsylvania, and his own Alma Mater have conferred on him the degree of LL.D.

George Washington University in 1910 called Charles Herbert Stockton, a rear admiral on the retired list, to serve as its acting president, in succession to Dr. Charles W. Needham. In Nov. he was confirmed to the full possession of the office. Admiral Stockton was born in Philadelphia, Pa., in 1845, and was graduated from the United States Naval Academy in 1865, in time to participate in some of the closing events of the Civil War. After various and many important duties, including the presidency of the Naval War College in 1898–1900, he was made rear admiral in 1906, and placed on the retired list a year later.

The University of Michigan has within the year confirmed her temporary choice of Harry Burns Hutchins to the full possession of the presidential chair. Pres. Hutchins was born in Lisbon, N. H., in 1847, and was graduated at the University of Michigan in 1871. He soon joined the professorial corps of his Alma Mater, filling various appointments, but chiefly and since 1895 that of professor of law and dean of the department of law. Except during 1887–94, when he was professor of law at Cornell, all of his life has been spent at Ann Arbor. He was acting president in 1897–98, and again in 1909, on the retirement of Pres. Angell. As the author of various law books and the editor of many law reports, notably those of the Michigan Supreme Court, he has gained a high reputation. Wisconsin in 1897 gave him the degree of LL.D.

University of North Dakota.—To the presidency of the University of North Dakota there was chosen in 1909 Frank LeRond McVey, who was born in Wilmington, Ohio, in 1869. He was graduated at Ohio Wesleyan in 1893, and then studied at Yale, receiving the degree of Ph.D. in 1895. For a year he taught in the Teachers' College of Columbia, and then passed to the University of Minnesota, where he was made professor of economics. Dr. McVey did excellent work as chairman of the Minnesota Tax Commission in 1907–09, and from 1898 till 1907 was president of the Minneapolis Associated Charities. He has been active in the American Economic Association, and is the author of *Populist Movement* (1896), and other works on subjects pertaining to his specialty.

University of Montana.—Clyde Augustus Duniway, who was born in Albany, Ore., in 1866, and graduated at Cornell in 1892, after which he studied at Harvard, receiving the degree of Ph.D. in 1897, has recently been made president of the University of Montana in Missoula. His teaching experience was gained first at Harvard, where he was professor of history, in Radcliffe, and then at Stanford, in California.

Kansas State Agricultural College.—Since July 1, 1909, Henry Jackson Waters has been president of the Kansas State Agricultural College in Manhattan. Pres. Waters was born in Center, Mo., in 1865, and was graduated at the University of Missouri in 1886, since when he has studied abroad at Leipsic and Zurich. His lifework has been chiefly in connection with the application of science to agriculture, for he has held important teaching positions at Pennsylvania State College and at the University of Missouri, serving at the same time as director of the state experiment stations connected with those institutions.

University of Nebraska.—At the University of Nebraska, Samuel Avery, who was born in Lamoille, Ind., in 1865, was elevated from the acting chancellorship to the permanent occupancy of that office on May 20, 1909. Chancellor Avery was graduated at Doane College in 1887, and, after studying at Nebraska, went to Heidelberg, where in 1896 he took the degree of Ph.D. On his return he was appointed to the department of chemistry in the University of Nebraska, of which in 1905 he was made head professor, filling, however, during 1902–05 the chair of agricultural chemistry and office of chemist of the Nebraska Experiment

Station. He is the author of a textbook, and has made important contributions to science in the domain of organic chemistry. In 1908 he was chosen acting chancellor of the university.

University of Minnesota. — Dr. George Edgar Vincent, of the University of Chicago, has been appointed president of the University of Minnesota, to succeed Dr. Cyrus Northrup. He graduated at Yale in 1885.

Fisk University.—George Augustus Gates was called to the presidency of Fisk University, in Nashville, in 1909. He was born in Topsham, Vt., in 1851, and was graduated at Dartmouth in 1873, after which he spent some time in study in Germany, and then was graduated at the Andover Theological Seminary. In 1880 he was ordained in the Congregational ministry, and has held pastorates in Montclair, N. J., and Cheyenne, Wyo. He was president of Iowa College in 1887–1901, and of Pomona College in 1902–09, since when he has been president of Fisk. Dartmouth has given him the degree of D.D., and the University of Nebraska the degree of LL.D.

Other elections to presidencies in colleges in the southern states include those of William P. Few to Trinity College, Durham, N. C., and Andrew A. Kincannon to the chancellorship of the University of Mississippi in Oxford, Miss.

The University of New Mexico called Edward Dundas McQueen Gray to be its president in 1909. Dr. Gray, who was born in Scotland in 1854, was educated at the universities of Heidelberg and London, receiving the degree of Ph.D. at the last-named institution in 1887. He has resided in New Mexico since 1893, where he has done much missionary work under the auspices of the Protestant Episcopal Church, in which he has taken orders. Numerous books, including several novels, have been published by him.

Mills College. — Miss Luella Clay Carson was called to the presidency of Mills College, near Oakland, Cal., in 1909. Miss Carson was born in Portland, Ore., where she was educated, graduating at St. Helen's Hall in 1877, and has further studied at the universities of Harvard, Chicago, California, and Cambridge, England. After teaching at various institutions in Portland, she became connected with the professorial staff of the University of Oregon in 1888, and during 1895–1909 was dean of the woman's department of that institution. Miss Carson has published a *Handbook of English Composition* (1907), and has received the degrees of Litt.D. and LL.D. from Pacific University and the University of Oregon respectively.

Naval Academy.—Mention must be made of the fact that at the United States Naval Academy in Annapolis, Md., Capt. John Marshall Bowyer was appointed superintendent in June, 1909. Capt. Bowyer was born in Cass County, Ind., in 1853, and was graduated at Annapolis in 1874. Besides other duties he participated in the Philippine insurrection, the Boxer troubles, and commanded the *Illinois* during the cruise around the world, attaining his present rank of captain on Nov. 8, 1907.

West Point.—Gen. Thomas Henry Barry was appointed superintendent of the United States Military Academy at West Point, N. Y., in 1910. Gen. Barry was born in New York City in 1855, and was graduated at the Military Academy in 1877. He served in the war with Spain, in the relief expedition to Peking, in the Philippines, where he was chief of staff, and commanded the army of Cuban pacification during 1907–09. He was made major general on April 29, 1908.

XXXIV. SOCIETIES AND INTERNATIONAL CONGRESSES

THE LEARNED AND TECHNICAL SOCIETIES PARTICIPATING IN THE YEAR BOOK

Thirty-two of the national learned and technical Societies and Associations of the United States are represented officially or unofficially upon the Supervisory Board of Editors of the AMERICAN YEAR BOOK. It is expected that other similar organizations will participate in future issues. Correspondence on this subject may be addressed to Albert Bushnell Hart, Chairman of the Advisory Board, Cambridge, Mass.

The main data regarding the participating organizations are given below.

American Academy of Political and Social Science:

Pres., L. S. Rowe, University of Pennsylvania, Philadelphia, Pa.; *Sec.*, Carl Kelsey, University of Pennsylvania; *Editor of The Annals*, Emory R. Johnson, University of Pennsylvania; *Treas.*, Stuart Wood, Philadelphia. Founded in 1889 to promote the political and social sciences. Membership, 5,165, distributed among every state and thirty-five foreign countries. Annual fee, $5; fee for life membership, $100. Annual meeting held in Apr.

American Association for the Advancement of Science:

Pres., A. A. Michelson, University of Chicago; *Perm. Sec.*, L. O. Howard, Department of Agriculture, Washington, D. C.; *Gen. Sec.*, Frederic E. Clements, University of Minnesota; *Sec. of Council*, John Zeleny, Minneapolis, Minn.; *Treas.*, R. S. Woodward, Washington, D. C. The association held its first meeting in Philadelphia in 1848, being a continuation of the American Association of Geologists and Naturalists, organized in 1840, and was chartered in 1874. Membership is 8,000. Admission fee, $5; annual dues, $3. Meetings are held annually, each time in a different city, during the Dec. convocation week. Official weekly journal, *Science*.

American Association of Economic Entomologists:

Pres., E. D. Sanderson, Durham, N. H.; *Vice Pres.*, H. T. Fernald and P. J. Parrott; *Sec. and Treas.*, A. F. Burgess, Bureau of Entomology, Washington, D. C. Organized in 1889. Number of members, 320. Annual meetings during Christmas holidays. Publication, *Journal of Economic Entomology*.

American Association for Labor Legislation (Section of the International Association):

Pres., Henry W. Farnam, Yale University, New Haven, Conn.; *Vice Pres.*, Jane Addams, Louis L. Brandeis, Robert W. DeForest, R. T. Ely, Samuel Gompers, S. M. Lindsay, J. W. Jenks, Warren S. Stone, Towner K. Webster; *Treas.*, V. E. Macy; *Sec.*, John B. Andrews, Metropolitan Tower, New York City. Organized, 1906. Membership, 1,500. Annual meeting in Dec. Publications, *Quarterly Bulletin of the International Labor Office;* numerous pamphlets and leaflets.

American Bar Association:

Pres., Edgar H. Farrar, New Orleans, La.; *Sec.*, George Whitelock, Baltimore, Md.; *Asst. Sec.*, W. T. Kemp; *Treas.*, Frederick E. Wadhams, Albany, N. Y. Each state and territory is represented by one vice president and one member of the General Council. Membership about 4,000. This association of lawyers of the United States was organized in 1878. The next annual meeting will be held in Aug., 1911. Publications, *Annual Reports of American Bar Association.*

American Chemical Society: *Pres.*, Wilder D. Bancroft, Ithaca, N. Y.; *Sec.*, Charles L. Parsons, Durham, N. H. The society was organized in 1876 for "the advancement of chemistry and the promotion of chemical research." Publishes the *Journal of the American Chemical Society*, monthly, and *Chemical Abstracts*, semi-monthly; *Editor*, A. M. Patterson, Columbus, Ohio. Also *Journal of Industrial and Engineering Chemistry*, monthly; *Editor*, W. D. Richardson, Chicago, Ill. Annual dues, $10. Total membership, 4,800.

American Economic Association: *Pres.*, Edmund J. James, president of the University of Illinois, Urbana, Ill.; *Sec.*, Thomas Nixon Carver, Harvard University, Cambridge, Mass. Organized, 1885. Has 1,500 members. Annual dues, $3; life membership, $50. The objects of the association are the encouragement of economic research and the general diffusion of economic knowledge.

American Historical Association: *Pres.*, Frederick J. Turner, Madison, Wis.; *Sec.*, W. G. Leland, Carnegie Institution, Washington, D. C.; *Treas.*, C. W. Bowen. Founded in 1884. Object: The promotion of historical studies. Membership, 2,800. Annual dues, $3. Annual meeting in Dec. Publications, *Annual Report*, *American Historical Review*, prize essays.

American Institute of Architects: *Pres.*, Irving K. Pond, Chicago, Ill.; *Sec. and Treas.*, Glenn Brown, The Octagon, Washington, D. C. The institute has 30 chapters, 305 fellows, 588 associates, 79 corresponding and 62 honorary members. Initiation fee, $25. Yearly dues: Fellows, $20; associates, $15. Organized, 1857.

American Institute of Criminal Law and Criminology: *Pres.*, Nathan William MacChesney, Chicago; *Vice Pres.*, W. H. DeLacy, E. T. Devine, J. D. Lawson, Adolf Meyer, C. F. Amidon; *Sec.*, Harry E. Smoot, Chicago, Ill. Date of organization, June 8, 1909. Present number of members, 200. Date of annual meeting, Aug. or Sept. Publications, *Journal of the American Institute of Criminal Law and Criminology*, *Annual Proceedings*, bulletins (giving results of research work from time to time).

American Institute of Electrical Engineers: *Pres.*, Dugald C. Jackson, Boston, Mass.; *Sec.*, Ralph W. Pope, at the executive offices, library, and reading rooms, 33 West Thirty-ninth Street, New York. Entrance fee, $5. Annual dues: Associates, $10; members, $15. Monthly meetings, New York; also frequent meetings of branches composed of local members in more than fifty cities and educational institutions in the United States and Canada; annual convention in June. Organized, 1884. Prints its *Proceedings* monthly. Membership, 6,634.

American Institute of Mining Engineers: *Pres.*, D. W. Brunton, Denver, Col.; *Sec.*, R. W. Raymond, 29 West Thirty-ninth Street, New York; *Treas.*, Frank Lyman, New York. Organized, 1871. Membership, 4,284. Annual dues, $10. Annual meeting the third Tuesday in February.

American Mathematical Society: *Pres.*, Maxime Bôcher, Cambridge, Mass.; *Sec.*, F. N. Cole, Columbia University, New York City; *Treas.*, J. H. Tanner; *Librarian*, D. E. Smith. Meetings held at intervals of two months at Columbia University, the University of Chicago, and other points. The society was organized as the American Mathematical Society, 1894. Object: To encourage and maintain an active interest in and to promote the advancement of mathematical science. Admission fee, $5; annual dues, $5; life membership, $50. Membership, 600. The society publishes two journals, the *Bulletin* and the *Transactions.*

American Medical Association:
Pres., Dr. J. B. Murphy, Chicago, Ill.; *Vice Pres.*, E. E. Montgomery, Philadelphia; R. C. Coffey, Portland, Ore.; W. G. Moore, St. Louis; H. L. E. Johnson, Washington, D. C.; *Treas.*, Frank Billings, Chicago; *Sec.*, G. H. Simmons, 535 Dearborn Avenue, Chicago. Incorporated, 1897. Next annual meeting at Los Angeles, 1911. Annual fee, $5. Membership, 34,176. Publication, *Journal of the American Medical Association.*

American Philological Association:
Pres., Paul Shorey, University of Chicago; *Vice Pres.*, John C. Rolfe, University of Pennsylvania, and Thomas D. Goodell, Yale University; *Sec. and Treas.*, Frank G. Moore, Trinity College, Hartford, Conn. Initiation fee, $5; annual dues, $3. Organized in 1869. Total membership, 641. Object: The advancement and diffusion of philological knowledge.

American Physical Association:
Pres., Henry Crew, Evanston, Ill.; *Vice Pres.*, W. F. Magie; *Treas.*, J. S. Ames; *Sec.*, Ernest Merritt, Ithaca, N. Y. Organized, 1899. Membership, 550. Annual meeting last week in December. Proceedings published in the *Physical Review.*

American Political Science Association:
Pres., Woodrow Wilson, Trenton, N. J.; *Vice Pres.*, E. J. James, A. B. Hart, W. F. Willoughby; *Sec. and Treas.*, W. W. Willoughby, Johns Hopkins University, Baltimore, Md. Founded, 1903. Membership, 1,300. Annual meeting in Dec. Annual dues, $3. Publications, *Annual Proceedings*, *American Political Science Review* (quarterly).

American Society of International Law:
Hon. Pres., William H. Taft; *Pres.*, Elihu Root; *Vice Pres.*, W. R. Day, P. C. Knox, Andrew Carnegie, J. H. Choate, J. W. Foster, George Gray, J. W. Griggs, W. W. Morrow, Richard Olney, Horace Porter, O. S. Straus, S. M. Cullom, and J. M. Dickinson; *Recording Sec.*, James B. Scott, Washington, D. C.; *Treas.*, Chanler P. Anderson. Membership, 900. Dues, which include subscription to publications without extra charge, $5 per annum. Publications, *American Journal of International Law* and *Annual Proceedings of the Society.*

American Society of Mechanical Engineers:
Pres., George Westinghouse, Pittsburg, Pa.; *Sec.*, Calvin W. Rice, 29 West Thirty-ninth Street, New York City. Membership, all grades, 3,846. Two annual meetings. Initiation fee, members and associates, $25; juniors, $15. Annual dues, members and associates, $15; juniors, $10. Chartered in 1881. Monthly meetings in New York, Boston, and St. Louis. Publications, *The Journal*, monthly, and *The Transactions* (bound), yearly.

American Society for Testing Materials:
Pres., Henry M. Howe, Columbia University, New York City; *Vice Pres.*, Robert W. Lesley; *Sec. Treas.*, Edgar Marbury, University of Pennsylvania, Philadelphia, Pa. Organized, 1898. Membership, 1,316. Annual meeting last of June or first week in July. Publications, *Proceedings*, *Year Book.*

American Sociological Society:
Pres., Franklin H. Giddings, Columbia University, New York City; *Vice Pres.*, A. W. Small, E. A. Ross; *Sec. and Treas.*, A. A. Tenny, Columbia University. Organized, 1905, to encourage the scientific study of society. Membership about 250. Annual dues, $3. Annual meeting during Christmas week. Publications, *Proceedings* of the society, and each member is en-

titled to receive the *American Journal of Sociology.*

American Statistical Association: *Pres.*, S. N. D. North, New York City; *Vice Pres.*, Walter F. Willcox, Frederick L. Hoffman, Henry W. Farnam, Martin A. Knapp, E. D. Durand; *Sec.*, C. W. Doten, 491 Boylston Street, Boston, Mass.; *Treas.*, S. B. Pearmain. Membership, 435. Annual dues, $2. Association organized, 1839. Annual meeting in Dec. Publication, *Quarterly Publications of the American Statistical Association.*

Archæological Institute of America: *Pres.*, Prof. E. D. Perry, Columbia University, New York City; *Sec.*, G. M. Whicher, Normal College, New York City. Organized, 1879. Membership, 166. Annual meeting first Saturday in Nov.

Astronomical and Astrophysical Society of America: *Pres.*, Edward C. Pickering, Cambridge, Mass.; *Sec.*, W. J. Hussey, Ann Arbor, Mich. Organized, 1899. Membership, 234. Annual meeting in Aug. at the Harvard Observatory, Cambridge, Mass.

Botanical Society of America: *Pres.*, Dr. Erwin F. Smith, Washington, D. C.; *Sec.*, Prof. G. T. Moore, St. Louis, Mo. Formed in 1906 by federation of the Botanical Society of America, Society for Plant Morphology and Physiology, and American Mycological Society. Membership, 138. Usually meets with the American Association for the Advancement of Science. Publication, *Annual Report.*

Geological Society of America: *Pres.*, Arnold Hague, Washington, D. C.; *Sec.*, E. O. Hovey, American Museum of Natural History, New York City; *Treas.*, William Bullock Clark, Baltimore, Md.; *Editor*, J. Stanley-Brown. Society founded in 1888. Has 330 fellows. Entrance fee, $10; annual dues, $10. Annual meeting last week in Dec. Publication, *Bulletin of the Geological Society of America.*

National Conference of Charities and Corrections: *Pres.*, Homer Folks, New York, N. Y.; *Vice Pres.*, David F. Tilley, Boston, Mass.; *Vice Pres.*, Francis G. Eaton, St. Louis, Mo.; *Vice Pres.*, Frank L. McVey, Grand Forks, N. D.; *General Sec.*, Alexander Johnson, Fort Wayne, Ind.; *Treas.*, The Washington Loan & Trust Company, Washington, D. C. The conference was organized in 1874, beginning as a committee of the Social Science Association. It has met as an independent body beginning with 1877, and annually ever since. It has 2,000 ordinary and 200 sustaining members. The dues are $2.50 and $10 respectively. The next meeting will be in Boston, Mass., June 7–14, 1911. The official publications are the *Bulletin* and the *Proceedings*, selling for $2.

National Education Association of the United States: *Pres.*, Mrs. Ella Flagg Young, Chicago, Ill.; *Vice Pres.*, James Y. Joyner, Miss Julia Richman, F. L. Cook, G. A. McFarland, T. C. Miller, C. S. Foos, H. H. Seerley, F. C. Hayes, E. T. Fairchild, Samuel Avery, C. A. Duniway; *Treas.*, Durand W. Springer; *Sec.* Irwin Shepard, Winona, Minn. Organized, 1857; present charter adopted in 1907. Members, 12,385. Annual meeting usually the first week in July. Annual publication, *Addresses and Proceedings of the National Education Association.*

National Geographic Society: *Pres.*, Henry Gannett, Washington, D. C.; *Vice Pres.*, O. H. Tittmann; *Sec.*, O. P. Austin, Washington, D. C.; *Editor*, Gilbert H. Grosvenor. Headquarters at Washington, D. C. Its purpose is "the increase and diffusion of geographic knowledge." Organized, 1888. Annual dues, $2. There are 59,000 members. Monthly publication, *National Geographic Magazine.*

National Municipal League: *Pres.*, William Dudley Foulke, Richmond, Ind.; *Vice Pres.*, A. Lawrence Lowell, H. D. W. English, Charles Richardson, Thomas N. Strong, George McAneny, and Charles B. Merriam; *Treas.*, George Burnham, Jr.; *Sec.*, Clinton Rogers Woodruff, Philadelphia, Pa. Organized in 1894. There are 214 organizations with an enrolled membership of 185,524. Annual members, $5; contributing members, $25.

Society of Naval Architects and Marine Engineers:
Pres., Stevenson Taylor, New York; *Sec. Treas.*, William J. Baxter, 29 West Thirty-ninth Street, New York City. Object: The promotion of the art of shipbuilding, commercial and naval. Headquarters, 29 West Thirty-ninth Street, New York City. Membership fee for members and associates, $10; annual dues, $10. Juniors, membership fee, $5; annual dues, $5. Members, associates and juniors, 850. Organized, May 10, 1893. Annual meeting in New York in Nov.

PATRIOTIC SOCIETIES

Marcus Benjamin

Those organizations, whose chief aims are to perpetuate the patriotic services of ancestors, and to develop an increasing love of country, and in which membership is had in virtue of descent from some worthy ancestor, by their growth in recent years as well as by their valuable work, have earned increasing recognition. The oldest of these patriotic-hereditary associations is the Society of the Cincinnati, organized in 1783 at the time of the disbandment of the Continental Army. Like it, other organizations have come into existence at the close of every war in which this country has participated; but subsequent to the series of centennial celebrations that followed the anniversary of the battle of Lexington, in 1775, they have been more flourishing and have devoted themselves to an unceasing activity in patriotic work. These societies may be classed according to the time of the events which they commemorate.

Colonial Period.—The Society of Mayflower Descendants perpetuates the memory of the Mayflower Pilgrims, and admits to membership lineal descendants, of both sexes, of those who came to the New World in that historic vessel. Its work has been chiefly connected with memorials in Plymouth, Mass. Of recent origin is the Society of the Ark and Dove, that recalls the first settlers in Maryland. The Order of Colonial Governors consists of descendants of those worthy men who exercised supreme authority in the colonial period. It has published several books. The Society of Colonial Wars admits to membership descendants of those who held military, naval, or civil offices of high trust and responsibility. This organization has erected monuments at Louisburg, Lake George, and numerous tablets commemorating historic events in New York, Pennsylvania, District of Columbia, and elsewhere. Its publications of historical information are of great value. Membership, 4,000. The Order of Founders and Patriots in America has similar objects, and has erected numerous tablets.

The National Society of Colonial Dames of America, the first of the patriotic-hereditary societies to be established by women, admits to membership (by invitation only) women who are descended from some ancestor of worthy life who came to the New World prior to 1776. Its work has included the publication of valuable historic volumes, and the erection of tablets. Membership, 450. The National Society of the Colonial Dames of America is similar but somewhat broader, having many state societies. It admits its members on invitation only, and requires descent from an ancestor who came to the New World prior to 1750. It has published historic works, such as the *Letters of William Pitt*, erected tablets, and secured the preservation of historic houses, such as the Van Cortlandt Manor in New York, and the Quincy House in Quincy, Mass. Membership, over 6,000.

Period of the Revolution.—The Society of the Cincinnati was organized May 10, 1783, and is composed of descendants of officers who served at least three years in the Continental Army. There are thirteen state societies. It has put up many memorial tablets, and has erected a colossal statue of Washington in Philadelphia, Pa. Of national character is the Society of the Sons of the American Revolution, with its forty-three state and two foreign organizations. It admits to membership lineal descendants of those who participated in the War of Independence. Pedigrees of its members, books of the state societies, and many memorials have been its chief work. Membership, 12,000.

The Society of the Sons of the Revolution has similar qualifications for membership, and besides numerous memorial tablets has erected a statue of Nathan Hale in New York City, where also Fraunce's Tavern was restored and is now preserved by that society, which uses it as its headquarters. Membership, 8,000.

The Military Order of Foreign Wars admits participants and descendants of those who took part in the various wars of the United States.

The Society of the Daughters of the American Revolution has admitted to membership nearly 70,000 women descended from participants in the war which it commemorates. It publishes the *American Monthly*, and has issued lineage books giving the pedigrees of its members. It has preserved historic buildings, erected monuments, raised commemorative tablets, and marked great roadways like the Santa Fé trail. Continental Hall, built at a cost of over $300,000, is its headquarters in Washington, D. C.

The Society of the Daughters of the Revolution has similar objects, but its work has been less and is confined chiefly to New York and adjacent states. The Society of the Children of the American Revolution does a work similar to that of the foregoing organizations, and admits to membership those who are too young for the older societies.

Period of the War of 1812.—The Society of the War of 1812 admits to membership only descendants of officers, while the General Society of the War of 1812 receives any lineal descendant of a participant in that war. Corresponding to these organizations is the Society of the United States Daughters of 1812, which admits women only. All of these societies publish rosters of their members, and have commemorated historic events by means of tablets.

Period of the War with Mexico.—The Aztec Club of 1847, founded in the City of Mexico, Oct. 13, 1847, consists of the officers who actually took part in that war, and representatives of deceased officers. Membership, 228.

Period of the Civil War.—The Military Order of the Loyal Legion, with twenty-one commanderies in the loyal states, admits officers and their descendants into its organization. The Grand Army of the Republic, with its associated societies, the Women's Relief Corps and the Sons of Veterans, have done a splendid work in aiding the old and needy veterans of the Civil War. It has a membership of 225,157. The Union Veteran Legion and the Union Veteran Union are similar bodies, both of which have associated organizations with a membership of the wives, children, and relatives of veterans. In the southern States the United Confederate Veterans, the United Sons of Confederate Veterans, and the United Daughters of the Confederacy have done a similar work among the survivors of the lost cause. The great work of these societies of the period of the Civil War has been that of charity, and of caring for the graves of soldiers. The practice of celebrating Memorial Day with patriotic exercises was instituted by the Grand Army of the Republic, to which body credit is also due for making that day a public holiday.

Period of the War with Spain.—From this war grew the Naval and Military Order of the Spanish-American War, which admits to membership participants in that event who held the rank of commissioned officers. The United Spanish War Veterans takes in the soldiers and sailors of the army, navy, and marine corps, who served during this period. Of more restricted membership is the Society of the Army of Santiago de Cuba, the Military and Naval Society of the Porto Rican Expedition, and the

Rough Riders' Association, whose names clearly indicate their membership. There have been established more recently the Military Order of the Caraboa, and the Military Order of the Dragon. The former admits officers only who participated in the putting down of the insurrection in the Philippines, and the latter, officers who served in the relief expedition to Peking.

In addition to the foregoing there are many societies of a patriotic nature, such as the New England societies in various cities; also there are state societies in important centers, typical of which is the Ohio Society in New York City. These organizations, however, devote themselves chiefly to social events, such as annual dinners. Like these may be mentioned also the Holland Society of New York, which admits descendants of Dutch emigrants; the Huguenot Society of America, composed of descendants of French Protestants; the Pennsylvania-German Society, descended from early German and Swiss settlers in that State; the Colonial Society of Massachusetts, and that of Pennsylvania, both of which devote their incomes largely to the publication of colonial documents.

Among the very latest of the patriotic societies are several which restrict their membership to those whose ancestry was specially noted. Of this character is the Imperial Order of the Yellow Rose, election to which implies descent from royalty.

INTERNATIONAL CONGRESSES

The practice of holding international congresses at which subjects are discussed by delegates from leading nations is a growing one. Such congresses meet at regular intervals, usually every three years, and often in connection with international expositions. Among the more important congresses announced for 1911 are the following:

Egypt.—International Congress for Bettering the Lot of the Blind; Cairo, Jan.

France. — International Vegetable Fiber Congress; Roubaix.

Germany.—International Congress of Criminal Anthropology; Cologne. International Congress for Protection of Infants; Berlin, Sept. 11th–15th.

Great Britain. — Universal Races Congress; London.

Italy.—International Geographical Congress; Rome. International Congress on Tuberculosis; Rome. International Polar Congress; Rome.

Java. — International Fiber Congress and Exhibition; Sourabaya, July.

Latin America.—The Bolivian Congress; Caracas, July 1st–5th. (Congress of five republics liberated by Bolivar—Venezuela, Colombia, Peru, Ecuador, and Bolivia.)

Central American Conference. (Place and date of meeting not available.)

International Sanitary Conference of American states; Santiago, Chile. Dec.

International South American Postal Congress; Montevideo, Uruguay, Jan. 11th.

International Telegraph Congress of Latin American states; Caracas. (Date postponed indefinitely from Dec. 9, 1910.)

Netherlands. — Opium Conference; The Hague.

Spain.—International Cotton Congress; Barcelona.

Sweden.—International Dairy Congress; Stockholm, June 28th–July 1st.

Uruguay.—South American Postal Congress; Montevideo, Jan.

(See III, *The Growth of Internationalism.*)

THE HALL OF FAME

In March, 1900, Chancellor MacCracken, of the New York University, announced a gift of $250,000 to establish a Hall of Fame of great Americans, in connection with that institution. Fifty names were to be chosen in 1900 and five more each successive period of five years to the end of the century. Eligibility involved birth within the present territory of the United States. One hundred electors from all the states were designated to select fifty names from among those who might be nominated; and fifty-one votes were necessary to a choice. Twenty-nine persons received this number of votes, and were approved by the senate of the university, as follows, the number of votes received being indicated in each case:

George Washington, 97; Abraham Lincoln, 96; Daniel Webster, 96; Benjamin Franklin, 94; Ulysses S. Grant, 93; John Marshall, 91; Thomas Jefferson, 91; Ralph Waldo Emerson, 87; Robert Fulton, 86; Henry W. Longfellow, 85; Washington Irving, 83; Jonathan Edwards, 82; Samuel F. B. Morse, 82; David G. Farragut, 79; Henry Clay, 74; Nathaniel Hawthorne, 73; George Peabody, 74; Peter Cooper, 69; Robert E. Lee, 68; Eli Whitney, 69; John J. Audubon, 67; Horace Mann, 67; Henry Ward Beecher, 64; James Kent, 65; Joseph Story, 64; John Adams, 62; Wm. E. Channing, 58; Gilbert Stuart, 52; Asa Gray, 51.

In Oct., 1905, a second ballot was held, 95 electors voting out of 101 appointed. A majority of 51 was again required, except in the case of women, when a vote of 47 was accepted. The voting resulted:

John Q. Adams, 60; James R. Lowell, 59; Wm. T. Sherman, 58; James Madison, 56; John G. Whittier, 53; Alex. Hamilton, 88; Louis Agassiz, 83; John P. Jones, 55; Mary Lyon, 59; Emma Willard, 50; Maria Mitchell, 48.

The results of a third ballot were announced Oct. 22, 1910, ninety-seven electors having voted, as follows:

Harriet Beecher Stowe, 74; Oliver Wendell Holmes, 69; Edgar Allan Poe, 69; Roger Williams, 64; James Fenimore Cooper, 62; Phillips Brooks, 60; William Cullen Bryant, 59; Francis E. Willard, 56; Andrew Jackson, 53; George Bancroft, 53; John Lothrop Motley, 51.

The present enrollment is, therefore, fifty-one persons.

The Hall of Fame is a semicircular edifice of granite, which connects two of the university buildings at University Heights. It comprises a museum of seven rooms on the ground floor and a colonnade above over 400 feet in length. In Feb., 1904, the plan was announced of an additional structure in the form of a loggia, joining the colonnade on the north, having thirty panels for foreign-born Americans, six to be filled in 1905, and beyond this of a Hall of Fame for women, with a museum on the ground floor and a main story above of twenty-eight columns, supporting a pedimented roof, with places for sixty tablets, ten to be filled in 1910. The hall was dedicated on May 30, 1901.

XXXV. CHRONOLOGY AND NECROLOGY

AMERICAN CHRONOLOGY

JANUARY

5.—Governor Hughes, of New York, announces a gift of 11,000 acres of land and $1,000,000, from Mrs. E. H. Harriman, for creating a State park.

6.—A letter from Gifford Pinchot to Senator J. P. Dolliver is read in the Senate, in which Mr. Pinchot endorses the charges against Secretary Ballinger, and criticizes the removal of Glavis.

7.—The House adopts a resolution for a joint investigation of the Ballinger-Pinchot controversy by a vote of 149 to 146, the division arising over the amendment providing that the members of the committee be appointed by the House instead of by the Speaker, which was adopted.

President Taft removes from office Chief Forester Gifford Pinchot.

11.—Statue to Gen. Lew Wallace unveiled, Washington, D. C.

14.—Charles R. Heike, secretary, and five employees of the American Sugar Refining Company indicted in New York City for conspiracy in connection with weighing scandals.

The House receives a special message from the President on the conservation of natural resources.

17.—The Shoshone Dam, the highest in the world, is completed at Cody, Wyo.

18.—President Taft and Governor Hughes address the conference of governors at its opening session in Washington.

22.—Gifford Pinchot elected President National Conservation Association.

Memorial statue of Phillips Brooks, designed by Saint Gaudens, unveiled at Trinity Church, Boston.

23.—The federal court at Kansas City enjoins the Missouri, Kansas & Texas Railroad from refusing shipments of liquor into the "dry" states of Oklahoma and Kansas.

25.—John W. Daniel (Dem.) reelected United States Senator by the Virginia Legislature.

27.—Eleven persons, city officials and contractors, are indicted by the grand jury in Chicago for conspiracy to defraud the city of $254,000.

28.—President Taft instructs the attorney general to press the government's suit to dissolve the merger of the Union Pacific and Southern Pacific railroads.

FEBRUARY

1.—William E. Purcell is sworn in as Senator from North Dakota, succeeding Mr. Thompson, resigned.

2.—The General Education Board distributes $450,000 among a number of colleges.

4.—A jury in the Circuit Court at Hartford, Conn., returns a verdict of $74,000 against the union hatters for conspiracy to boycott D. E. Loewe & Company, of Danbury.

8.—The National Sugar Refining Company pays the Government $604,304.37 for back duties on underweighed sugar importations.

The National Geographic Society accepts Commander Peary's proposition to undertake jointly with the Peary Arctic Club an expedition to the Antarctic regions; Commander Peary, at a lecture in New York, donates toward the expedition $10,000 presented to him.

9.—The Senate unanimously passes a bill to promote Robert E. Peary to the grade of Rear-Admiral and place him on the retired list.

The bill establishing the Glacier National Park, comprising 14,000 square miles in northern Montana, is passed by the Senate.

A statue of Morris K. Jesup unveiled at the fortieth anniversary exercises of the American Museum of Natural History in New York.

The Secretary of Agriculture opens to settlement 4,000,000 acres of the public domain formerly included in the forest reserves.

10.—The Senate instructs its members on the Joint Printing Committee to ignore a summons to appear before the Supreme Court of the District of Columbia, while the House directs its members on the committee to obey the summons.

12.—President Taft, speaking at New York, defends the legislative program of the Republican Party.

17.—The voters of Cleveland approve a franchise to the Cleveland Railway Company by which service is to be furnished, under control of the city, at cost plus six per cent return to stockholders, the maximum fare being four cents.

Secretary Ballinger withdraws from the public domain 2,000,000 acres of coal lands in Wyoming and Montana.

19.—The employees of the Philadelphia Rapid Transit Company go on strike, demanding a recognition of the union and increase in wages.

21.—In the Senate, Mr. Aldrich states that it is possible to save $300,000,000 annually in government expenses.

Clarence O. Pratt, national organizer of street-railway employees, is arrested in Philadelphia, charged with inciting riot.

22.—The Mississippi legislature, after a seven weeks' deadlock, elects Leroy Percy (Dem.) United States Senator for the unexpired term of the late A. J. McLaurin.

23.—Eight directors of the Consolidated Milk Exchange indicted by a grand jury in New York City for conspiring to fix the wholesale price of milk.

26.—President Taft sends a special message to Congress urging legislation to improve the personnel of the navy.

John J. Murphy, President of the Central Labor Union of Philadelphia, is arrested, charged with inciting rioting in the car strike.

27.—The Post Office Department formally replies to the statement of periodical publishers regarding second-class rates, declaring it erroneous and misleading.

28.—A letter from Senator Root, advocating the proposed income-tax amendment, is read in the Legislature at Albany.

MARCH

1.—The Third Avenue Railroad, of New York City, is sold at auction for $26,000,000 to a reorganization committee of its bondholders.

The Philadelphia Rapid Transit Company refuses to arbitrate its difference with striking employees.

2.—In the House, the bill appropriating $500,000 a year for the purchase of embassy buildings abroad is defeated.

Announcement made of a proposed Rockefeller Foundation to promote the well-being and advance the civilization of the peoples of the world, to disseminate knowledge and to prevent and relieve suffering. A federal charter is asked of Congress.

The State-wide local option bill rejected by the Maryland House of Delegates.

5.—About 40,000 union men go on strike in Philadelphia in sympathy with street-car employees.

7.—The United States Supreme Court, in two decisions, overrules the Interstate Commerce Commission for issuing orders in excess of authority.

16.—President Taft leaves Washington on a 2500-mile trip to Chicago, Albany, New Haven, New York, and other cities.

18.—An investigation by the New York State Superintendent of Insurance reveals the payment, by fire insurance interests, of large sums of money to politicians at Albany in 1901 to 1906.

The Chesapeake & Ohio secures control of the Hocking Valley Railroad.

Argument before the United States Supreme Court on the constitutionality of the corporation tax.

19.—President Taft and Governor Hughes address the antituberculosis conference at Albany.

President Taft and Earl Grey, Governor-General of Canada, speak on Canadian-American relations at a dinner in Albany.

20.—At Albany, President Taft confers with Earl Grey and the Canadian Minister of Finance, Mr. Fielding, on the tariff question.

21.—A Chicago Federal Grand Jury indicts what is called the Beef Trust for violation of the Sherman Antitrust Law. The companies indicted are as follows: National Packing Company, Illinois; G. H. Hammond Company, Michigan; Anglo-American Provision Company, Illinois; Omaha Packing Company, Illinois; Fowler Packing Company, Illinois; United Dressed Beef Company, New York; Western Packing Company, Denver; New York Butchers' Dressed Meat Company, New York; Hammond Packing Company, Illinois; St. Louis Dressed Beef & Provision Company, Missouri. At the same time the government filed a suit in equity, asking for a dissolution of the companies.

Indictments against forty former or present councilmen returned by the grand jury investigating the "graft" scandals in Pittsburg; nineteen others confess to secure immunity.

22.—At a special election in the Fourteenth Congressional District of Massachusetts, to fill a vacancy caused by the death of William C. Lovering, Eugene N. Foss, the Democratic candidate, was elected over Wm. R. Buchanan, Republican, by a majority of 5,640. Congressman Lovering's majority, at his last election, 1908, was 14,250. Mr. Foss, formerly a Republican, was the Democratic candidate for Lieut.-Governor of Massachusetts in 1909.

The general strike in Philadelphia is called off after the striking street-car employees refuse concessions offered.

24.—As a result of the graft exposures in Pittsburg a movement is started to adopt the commission form of government.

28.—The New York, New Haven & Hartford Railroad grants an increase in wages and shorter hours to trainmen, conductors and yardmen.

29.—The House adopts a resolution for an investigation of the alleged ship-subsidies lobby.

30.—The Philadelphia & Reading Railroad announces a wage increase of six per cent to employees receiving less than $300 a month.

Proclamations granting minimum tariff rates to Canada and Australia are signed by President Taft, thereby completing the extension of minimum rates to the entire world.

APRIL

1.—Mayor Gaynor of New York City issues an order forbidding the sale of fireworks from June 11 to July 11.

The New York Central Railroad announces a seven per cent wage increase for practically all employees.

2.—The Bethlehem Steel Works announces an advance of wages to common laborers.

The Maryland Legislature passes the Digges bill disfranchising negroes in state and municipal elections.

4.—The Supreme Court declares unconstitutional the Nebraska law requiring railroads to build switches to grain elevators and the Arkansas law penalizing railroads for failure to supply sufficient cars.

5.—Dealing in futures on cotton exchanges is prohibited, in a bill agreed upon by the House Committee on Agriculture, unless there is a bona fide intention of actually delivering the cotton.

In Milwaukee the Social Democrats elect the Mayor, a majority of the city council, a majority of the board of supervisors, and two civil court judges.

The Indiana Republican convention adopts a platform demanding further tariff revision, and indorsing the Roosevelt policies and the Taft administration.

6.—Frank N. Hoffstot, President of the Pressed Steel Car Company, is indicted in the Pittsburg investigation.

The military court of inquiry into the Brownsville shooting affirms the guilt of the negro soldiers of the Twenty-fifth Infantry.

Senator Benn Conger of the Forty-first District, N. Y. State Senator, informally prefers charges against Senator Jotham P. Allds, of the Thirty-first District, in connection with the latter's candidacy for the position of president *pro tempore* of the Senate. The charges were that Senator Allds had accepted a bribe in 1901, in consideration of the defeat of a measure then pending before Mr. Allds' Committee in the Assembly, imposing conditions and restrictions upon the building of new bridges in the towns of the state. The charges were subsequently made public, after Senator Allds had been elected president *pro tempore*. He denied them, and demanded an investigation. Accordingly Senator Conger made formal charges, and the trial of the case begun in February, closed on March 30, with a vote of 40 to 9 that the charges had been proved. Just prior to this vote, Senator Allds resigned his seat in the Senate, thus precluding any further action by that body. On April 5 Senator Conger, in a long speech, resigned his seat in the Senate, thus forestalling action on a pending motion for his expulsion, as having been party to the bribe offered to and accepted by Senator Allds.

8.—The New York City Board of Estimate authorizes $60,000,000 for subways.

Governor Crothers, of Maryland, announces that he will withhold his approval from the Digges bills for the disfranchisement of negro voters, but that he will approve the amendment to the constitution to be submitted to the people next year, under which, if approved, negroes will not be permitted to vote unless they own property assessed at $500.

9.—At a dinner of Republican clubs, President Taft urges all Republicans to stand together and to carry out the administration's legislative program.

10.—The Interstate Commerce Commission publishes a decision requiring the Pullman Company to charge less for upper than for lower berths.

11.—Governor Hughes, in a message to the New York Legislature, urges a thorough inquiry into legislative corruption.

The Supreme Court of the United States announces a reassignment of the argument of the cases of the United States against the American Tobacco and Standard Oil companies. This action is due to the death of Justice Brewer and the illness of Justice Moody, and is assumed to indicate that otherwise a decision of these cases would be that of a minority of the full court.

13.—Governor Patterson, of Tennessee, pardons Duncan B. Cooper, convicted of slaying ex-United States Senator Carmack in 1908; the State Supreme Court had just affirmed the conviction.

The Trustees of Tufts College discontinue coeducation.

14.—The committee of street-car employees in Philadelphia accepts the terms offered by the traction company.

15.—The President sends a special message to Congress, urging that the government take charge of seal islands in the Bering Sea.

The U. S. Steel Corporation adds $9,000,000 to its annual payroll by an increase of about six per cent affecting 225,000 men.

The Cherokee claim, passed on by the Court of Claims, amounts to between four and five millions, with more than thirty thousand beneficiaries.

The federal census enumeration for 1910 is begun.

19.—The Attorney General of the United States orders an inquiry, under the antitrust act, into the bull movement in cotton with which the names of James A. Patten of Chicago, Frank B. Hayne and William P. Brown of New Orleans, and Eugene Scales of Texas have been connected.

Announcement is made in Washington that Senator Nelson W. Aldrich of Rhode Island and Senator Eugene Hale of Maine will retire from the United States Senate at the expiration of their present terms.

20.—At a special election in Monroe County, N. Y., to fill the congressional vacancy caused by the death of James B. Perkins, James S. Havens (Dem.) is elected over George W. Aldridge, the Republican candidate, by a majority of 5,831. Mr. Perkins's majority in the district in 1908 was 10,167.

21.—The New York legislature authorizes the appointment of a special committee to investigate legislative corruption.

22.—Secretary Ballinger withdraws from entry 13,500,000 acres of Montana coal lands.

25.—Governor Charles E. Hughes of New York appointed Associate Justice of the United States Supreme Court, succeeding the late David J. Brewer.

26.—U. S. Steel Corporation declares a quarterly dividend of 1¼ per cent on Steel Common, making it a five per cent stock.

Dedication of new building in Washington donated by Andrew Carnegie for the International Bureau of American Republics.

27.—Oscar Hammerstein announces his withdrawal from the grand opera field.

28.—The Democratic Convention at Indianapolis indorses John W. Kern as candidate for United States senator.

30.—In a special message to Congress President Taft urges the completion of Panama canal defenses by 1915.

A Democratic member of the Illinois legislature declares that he received $1,000 from his party leader for voting for the election of William Lorimer as United States Senator.

MAY

2.—The Supreme Court of the United States renders decisions confirming the disbanding of the Association of Retail Lumber Dealers in Mississippi and Louisiana and ousting the Standard Oil Company of Kentucky from Tennessee.

5.—Secretary Knox and Ambassador Bryce exchange ratifications of the new waterway treaty with Canada.

6.—Three members of the Illinois legislature are indicted in Chicago in connection with the alleged bribery in the election of Senator Lorimer.

10.—The Massachusetts House passes a resolution favoring a constitutional amendment providing for popular election of United States Senators.

11.—Governor Hughes signs the New York City debt limit bill granting an additional $100,000,000 for subway construction. This excludes self-sustaining subway and dock bonds in computing the debt limit.

12.—Battleship *Florida* launched at the Brooklyn Navy Yard.

20.—The Graduate School of Princeton University receives a legacy estimated at several millions from the estate of Isaac C. Wyman, of Salem, Mass.

The taking of testimony in the Ballinger-Pinchot investigation is completed.

23.—Oliver Spitzer, former dock superintendent convicted for sugar weighing frauds, appears as a Government witness at the trial of Charles R. Heike, having been pardoned by President Taft.

27.—The direct nominations bill favored by Governor Hughes is defeated in the Assembly at Albany, 94 to 46.

The New York Central Railroad announces an increase in its commutation fares between New York City and suburban stations.

Three of the codefendants of C. R. Heike, on trial for defrauding the government in sugar-weighing, plead guilty.

Governor Draper, of Massachusetts, vetoes an eight-hour labor bill.

28.—Senator Lorimer, of Illinois, denies the charges of bribery in connection with his election to the Senate.

31.—An injunction is granted by U. S. District Judge Dyer temporarily restraining twenty-four western railroads from putting into effect an increased rate schedule.

JUNE

1.—Charles D. Norton, Assistant Secretary of the Treasury, appointed Secretary to the President.

3.—President Taft speaks at the graduation exercises of Ohio Northern University, Ada, Ohio.

4.—In an address at Jackson, Mich., President Taft declares socialism to be a coming American problem.

6.—Following a conference at the White House, Western railroads agree to withdraw higher schedules and President Taft withdraws injunction proceedings pending Commerce Commission investigation.

8.—Governor Hughes vetoes the primary bill passed at the recent session of the New York legislature.

10.—Charles R. Heike, Secretary of the American Sugar Refining Company, is convicted in New York of conspiracy to defraud the government.

17.—The Federal Grand Jury in New York indicts eight men, including James A. Patten, on charges of violation of the Sherman antitrust law in connection with the recent "bull pool" in cotton.

20.—The President signs a bill erecting new states out of the territories Arizona and New Mexico, thus putting under the form of state government all the territory of continental United States, with the exception of the District of Columbia.

The Senate directs the Committee on Privileges and Elections to investigate the bribery charges made in connection with the election of Senator Lorimer of Illinois.

The New York State legislature convenes at Albany in extra session; Governor Hughes sends a message recommending the enactment of a suitable direct nominations law, the amplification of the investigation of alleged legislative corruption, and provision to meet the increased demands on the state's revenue.

22.—It is announced that the greater portion of Goldwin Smith's estate (estimated at $1,000,000) has been left to Cornell University.

23.—The House, on the request of President Taft, strikes out its amendment to the sundry civil bill, which exempted labor organizations from prosecution under the antitrust and interstate commerce laws.

24.—The House passes the antioption bill and the Appalachian forest reserve bill.

Senator Gore, of Oklahoma, charges that he has been offered a bribe of $50,000 to defeat an amendment to the general deficiency bill subjecting all contracts for the sale of land controlled by the Choctaw and Chickasaw Indians to the approval of Congress and that other members of Congress are "interested" in the defeat of the measure.

25.—The first regular session of the Sixty-first Congress ends.

28.—Secretary of State Knox refuses to surrender Porter Charlton, wanted in Italy on the charge of murder, unless that country will guarantee to return Italians wanted for crime in the United States.

Sir Caspar Purdon Clarke resigns as Director of the Metropolitan Museum of Art of New York City and is granted a life pension of $5,000 a year.

President Taft leaves Washington for Beverly, Mass.

After six months of investigation, the grand jury headed by John D. Rockefeller, Jr., reports that no organized "white slave" traffic exists in New York City.

29.—The Interstate Commerce Commission, in six decisions, orders sweeping reductions in freight rates on Western railroads.

JULY

1.—The New York State legislature adjourns after both houses pass the progressive inheritance tax bill, and the Senate joins with the Assembly in defeating the Cobb direct primary bill.

2.—The Forty-eighth Annual National Education Convention opens in Boston.

3.—President Taft orders 8,495,731 acres of power-site, oil, coal, and phosphate lands in Alaska withdrawn.

5.—Governor J. Y. Sanders elected United States Senator from Louisiana to succeed S. D. McEnery, deceased.

7.—President Taft withdraws 35,073,164 acres of coal lands in the west, under the new conservation law.

Mrs. Ella Flagg Young, Superintendent of the Chicago schools, elected President of the National Education Association.

13.—The Interstate Commerce Commission, under the new law, temporarily suspends the proposed increases in freight rates on eastern and western railroads, but refuses to suspend advances in commutation rates on New Jersey railroads.

14.—Lawrence Gresser, President of the Borough of Queens, New York City, indicted by a grand jury for an alleged auditing of a fraudulent claim against the city.

19.—Major-General Leonard Wood assumes his duties as Chief of Staff of the United States Army.

Resignation of Miss Caroline Hazard, President of Wellesley College.

23.—The Democratic primary in Texas results in the nomination of the antiprohibition candidate for governor, Oscar B. Colquitt; the proposition to submit to the people a constitutional amendment providing for statewide prohibition, is carried.

26.—The first passenger train passes under the Detroit river through the new Michigan Central tunnel.

At Victoria, B. C., bids are requested for the construction of Canada's first warship, a cruiser of the Bristol type.

The Nebraska Democratic Convention at Grand Island rejects William J. Bryan's county option plank by a vote of 465 to 394; the Republican Convention adopts a county option plank.

28.—The Minnesota Democratic Convention nominates ex-Governor John Lind to head the state ticket, votes down county option, and indorses the initiative and referendum. A third party, called the "Keystone," is launched in Pennsylvania to oppose both the regular state tickets; William H. Berry is the nominee for governor.

31.—President Taft approves the opinion of the attorney general that there can be no legal objection to the statue of Gen. Robert E. Lee, in confederate uniform, in the capitol at Washington.

AUGUST

1.—Ex-Governor C. A. Swanson, of Virginia, appointed United States Senator to succeed the late J. W. Daniel.

The new Pennsylvania Railroad terminal in New York City formally opened and a statue of the late President Cassatt unveiled.

2.—Governor W. R. Stubbs (Rep.) is renominated on an insurgent platform in the Kansas primaries; the insurgents also carry six of the eight congressional districts.

Joseph W. McNeal (Rep.) and Lee Cruce (Dem.) are nominated for governor in the Oklahoma primaries; the so-called "grandfather clause" is carried, amending the state constitution and depriving about 30,000 negroes of the franchise.

3.—Governor Campbell, in a special message to the Texas legislature, urges the passage of a law prohibiting saloons within ten miles of public schools.

5.—President Taft makes the principal address at the dedication of the Pilgrim monument at Provincetown, Mass.

9.—Mayor Gaynor, of New York, about to start for Europe on a vacation, shot and seriously injured by a discharged city employee.

10.—The Interstate Commerce Commission orders 415 common carriers to show cause for proposed advances in freight rates.

Fifteen members of a mob which took part in a lynching at Newark, O., on July 8, indicted for fifth degree murder.

12.—The Texas Senate votes against the antisaloon measures which had passed the House by large majorities.

13.—The War Department sends troops to fight the forest fires raging over 100,000 acres in Montana and Idaho.

Three former executive officers of the Illinois Central Railroad arrested on warrants in connection with an alleged conspiracy by means of which the railroad was defrauded of $1,500,000. They were: Frank B. Harriman, formerly General Manager of the road; Charles L. Ewing, formerly Manager of lines north of the Ohio River; John M. Taylor, formerly General Storekeeper.

16.—The Republican State Committee of New York votes, 20 to 15, for Vice President James S. Sherman for temporary chairman of the State Convention, rather than Theodore Roosevelt.

The Rhode Island legislature convenes in special session to consider the report of the redistricting commission and to revise the tax laws.

18.—Congressman Longworth of Ohio, states that he will not support Joseph G. Cannon for reëlection as speaker; Mr. Cannon announces that he will again be a candidate for the position.

20.—The committee appointed by the House of Representatives to investigate Indian land affairs clears Vice President Sherman and Senator Curtis of any improper connection therewith.

29.—124 Chambers of Commerce, Boards of Trade and other commercial organizations from all sections of the country unite in a petition to the Interstate Commerce Commission for relief from alleged excessive and extortionate rates charged by the express companies for the transportation of merchandise.

The Interstate Commerce Commission begins at Chicago, before a special examiner, the hearing on the subject of the proposed increase of freight rates by the railroads of the country, provided for by the new railroad act.

30.—The legislative graft committee of New York State meets at City Hall.

The price of cotton at the New York Exchange advanced from 16.89 cents a pound to twenty cents for August contracts, or $100 a bale, being the highest price ever temporarily reached for cotton on the Exchange.

SEPTEMBER

1.—The Public Service Commission of New York City advertises for bids for a new subway system connecting three of the boroughs and costing $125,000,000.

2.—The New York cloakmakers' strike, involving 70,000 workers, is settled after a protracted struggle, on the basis of the "preferential shop."

3.—President Taft announces the personnel of the Stock and Bond Commission to investigate the supervision of stock and bond issues by interstate steam carriers: Arthur Twining Hadley, President of Yale University, chairman; F. N. Judson of St. Louis, Frederick Straus of New York, Walter L. Fisher of Chicago, and Prof. B. H. Meyer of the University of Wisconsin.

6.—Lieut.-Gov. John A. Mead (Rep.) is elected Governor of Vermont, defeating Charles D. Watson (Dem.) by about 17,500.

Senator J. C. Burrows (Rep.) is defeated for renomination, in the Michigan primaries, by Congressman Charles E. Townsend, a progressive.

Senator LaFollette is renominated by 50,000 plurality in the Wisconsin primaries.

Robert P. Bass, the progressive candidate, wins in the primaries the Republican nomination for Governor of New Hampshire.

The New Mexico election results in the choice of 68 Republican and 32 Democratic delegates to the constitutional convention, a majority of whom are against the initiative and referendum.

The National Association of Mexican War Veterans is finally dissolved at Indianapolis, there being but twenty-eight survivors.

7.—The Pennsylvania Railroad tunnel under the East River to Long Island begins operation at midnight.

The International Court of Arbitration at The Hague hands down a decision in the Newfoundland Fisheries case in which the United States gains five points and Great Britain two.

9.—Democratic members of the Ballinger-Pinchot investigating committee make public a report of their findings in Minneapolis, condemning Secretary Ballinger. Representative Madison, insurgent Republican, makes a separate report.

10.—Governor Patterson of Tennessee resigns his candidacy for the governorship.

United States Senator Lorimer resigns from the Hamilton Club of Chicago.

12.—Frederick W. Plaisted (Dem.) elected Governor of Maine, over Bert M. Fernald (Rep.), the present governor, by a plurality of 9,114, the first Democratic victory since 1880. Both branches of the Legislature are also Democratic, insuring a Democratic successor to Eugene Hale, the first to be elected in Maine since 1863. Democrats were elected in two of the four congressional districts.

The federal grand jury at Chicago returns indictments against officers of the Swift, Armour, Morris and National companies. The men indicted are: L. F. Swift, president; Edward Swift, vice president, and Charles H. Swift and Francis A. Fowler, directors of Swift & Co.; Edward Tilden, president of the National Packing Company; J. Ogden Armour, president; Arthur Meeker, general manager, and Thomas J. Conners, superintendent of Armour & Co.; Edward Morris, president, and Louis H. Heyman, manager, of Morris & Co.

The Democrats carry the Arizona election for delegates to the Constitutional Convention; the issue was the initiative, referendum, and recall, advocated by the Democrats.

The Democratic ticket in Arkansas elected by the usual majority; a constitutional amendment incorporating the initiative and referendum adopted.

13.—Six Republican members of the Ballinger-Pinchot Investigating Committee meet in Chicago and issue a statement denouncing the recent action of the Democratic members of the committee.

In the Washington primary, Congressman Miles Poindexter, an "Insurgent," wins by 40,000 plurality the Republican nomination for United States Senator to succeed Samuel H. Piles.

Ex-Governor E. C. Stokes wins the New Jersey Republican primary indorsement for United States Senator.

C. L. Blease (local optionist) secures the Democratic nomination for Governor of South Carolina in the second primaries.

14.—The Independent Democrats of Tennessee, in convention, indorse Captain Hooper, the Republican candidate for governor.

15.—Dr. Woodrow Wilson nominated for Governor of New Jersey by the Democratic Convention. He accepted the nomination and stated that he would offer his resignation as President of Princeton, on Oct. 20th.

A letter written by Secretary Norton, made public at Beverly, Mass., states that President Taft henceforth will distribute patronage to regulars and progressives alike.

Statewide primaries are held for the first time throughout Illinois; Speaker Cannon is renominated for Congress; Congressman Boutell is defeated by an insurgent.

Caleb Powers, three times convicted of complicity in the murder of William Goebel in 1900, and recently pardoned, is nominated for Congress at the Republican primaries in the Eleventh Kentucky district.

20.—William J. Bryan refuses to support the Nebraska Democratic ticket because of the party's stand on the liquor question.

Representative Tawney, of the First Minnesota district, is defeated for renomination in the Republican primaries.

21.—The President withdraws from entry 69,055 acres of coal land in Colorado, and 1,327 acres of power sites in California.

25.—Representatives of railroad organizations, with a membership aggregating 300,000, indorse the increases in freight rates and resolve to take concerted part in politics.

27.—Ex-President Roosevelt defeats Vice President Sherman for temporary Chairman of the New York Republican Convention at Saratoga by a vote of 568 to 443.

President Taft announces that all assistant postmasters will be put under civil service rules.

28.—The New York Republican Convention nominates Henry L. Stimson for governor and adopts a platform indorsing the Taft administration, the record of Governor Hughes, and direct nominations.

Frederick A. Cleveland, a director of the bureau of municipal research of New York City, is appointed as head of the new national bureau of economy.

30.—John A. Dix, Chairman of the State Committee, is nominated for governor by the Democratic Convention, receiving 434 votes to 16 for Congressman William Sulzer of New York.

OCTOBER

1.—Plant of Los Angeles Times destroyed by bomb, twenty-one persons losing their lives.

4.—Charles C. Harrison, provost of the University of Pennsylvania, tenders his resignation.

Associate Justice William H. Moody, of the United States Supreme Court, tenders his resignation because of ill health.

The Interstate Commerce Commission suspends transcontinental freight-rate advances until Feb. 6th.

6.—Governor Hughes resigns his office to take up the duties of a justice of the Supreme Court. Lieut. Gov. White sworn in as Governor of New York.

10.—The United States Circuit Court at St. Paul restores lumber rates from Portland, Ore., cut by the Interstate Commerce Commission.

11.—The United States Supreme Court sets the Standard Oil, tobacco, and corporation tax cases for argument on Jan. 3d.

The city of Lynn, Mass., adopts a charter providing for a commission form of government.

18.—Walter Wellman, who left Atlantic City on Oct. 15th in the dirigible *America*, intending to cross the Atlantic Ocean, abandons his dirigible off Cape Hatteras, and he and his crew are picked up by the liner *Trent*.

22.—International Aviation Meet opens at Belmont Park, L. I.

24.—The Secretary of the Interior orders the sale at auction of 1,650,000 acres of Indian lands in Oklahoma.

26.—The National Lumber Association announces a gift of $100,000 to the Yale Forestry School.

28.—The strike of employees of the express companies in Jersey City and Hoboken spreads to New York City.

31.—The budget of New York City carries $171,505,787, an increase of $8,000,000 over that of the current year.

Edward Robinson chosen director of the Metropolitan Museum of Art, in New York City, to succeed Sir Caspar Purdon Clarke.

NOVEMBER

1.—The Interstate Commerce Commission's hearing on the proposed freight-rate advances ends in Chicago.

5.—The Interstate Commerce Commission upholds the advances in freight rates in southeastern territory made by the Atlantic Coast Line, the Louisville & Nashville, and other railroads.

Tariff war with Germany threatened by refusal of German potash syndicate to accede to American conciliatory proposals.

9.—A Federal suit against the Standard Oil Company of Indiana is begun at Jackson, Tenn.

10.—The express strike in New York and Jersey City is declared off, the companies granting higher wages and shorter hours, but refusing to recognize the union.

11.—Senator Root and Dr. James B. Angell speak at the dedication of the John Hay Memorial Library, at Brown University, Providence, R. I.

The Federal Court at Pittsburg fines the Imperial Window Glass Company for violation of the Sherman anti-trust law.

14.—Pres. Taft arrives at Panama.

15.—The Oklahoma Supreme Court decides the state capital fight in favor of Guthrie.

Dr. Edgar F. Smith is chosen to succeed Dr. Charles C. Harrison as provost of the University of Pennsylvania.

20.—Gov.-elect Foss, of Massachusetts, issues a statement demanding the withdrawal of Senator Lodge as a candidate for reëlection.

25.—Pres. Taft orders that returns of corporations under the new corporation-tax law be made public, subject to the regulations prescribed by the Secretary of the Treasury.

27.—Pennsylvania Railroad inaugurates train service into New York City, formally opening tunnels under Hudson River.

28.—The Federal Government files a suit for the dissolution of the American Sugar Refining Company under the Sherman anti-trust law.

DECEMBER

5.—The Sixty-first Congress assembles for its final session.

6.—Pres. Taft's message is read in both Houses.

7.—Pres. Taft speaks at the National Rivers and Harbors Congress.

8.—The United States Circuit Court at Philadelphia dismisses the suit filed by the government to dissolve the alleged anthracite coal trust, but declares the Temple Iron Company to be a combination in violation of the Sherman anti-trust law.

10.—The census office announces the completion of its count, the total population of continental United States being 91,972,226, and including Alaska, Hawaii, and Porto Rico, 93,402,151.

Puccini's opera, "The Girl of the Golden West," is sung for the first time, at the Metropolitan Opera House in New York City.

14.—Andrew Carnegie makes a gift of $10,000,000 for the promotion of peace to a board of trustees headed by Senator Root.

16.—Chandler P. Anderson, of New York, succeeds the late Henry M. Hoyt as Counselor of the Department of State.

17.—The Urgent Deficiency Bill, carrying $1,000,000, passes both Houses of Congress.

Senator Lorimer is acquitted by a Senate committee of any connection with bribery in his election by the Illinois Legislature.

18.—A sharp engagement between Government and revolutionary troops is reported from Pedernales, Mexico.

It is planned to form a combination of Central and South American republics for the purpose of abolishing revolutions by the creation of an international police.

20.—John D. Rockefeller announces a final gift of $10,000,000 to the University of Chicago, making a total of $35,000,000 that he has given to that institution.

The Senate passes the Omnibus Claims Bill, carrying over $2,000,000.

21.—Congress adjourns until Jan. 5th.

29.—Joseph G. Robin, President of Washington Savings Bank, New York City, indicted for manipulating the funds of that bank and of Northern Bank of New York.

FOREIGN CHRONOLOGY

JANUARY

6.—The British Government pledges $100,000 toward the Scott expedition to the South Pole.

12.—Canadian Government's naval programme involves construction of eleven vessels at cost of $12,000,000.

21.—Japan and Russia decline to agree to Sec. Knox's proposal to neutralize the railways of Manchuria.

Heavy rains in France, Germany, and Italy do great damage to cities, factories, and farms. At Paris the Seine rose to the highest known level, thirty feet above low-water level, inundating about nine square miles or one quarter of the city.

26.—The trial of a native for conspiracy in India brings out the fact that the establishment of an independent kingdom had been planned, with a native ruler.

30.—The Chinese Government denies the petition of representatives of provincial assemblies, asking for the immediate establishment of a parliament, instead of at the end of nine years.

FEBRUARY

10.—Many arrests are made in Venezuela upon the discovery of a plot to overthrow the government in favor of ex-Pres. Castro.

19.—A Socialist member in the German Reichstag freely criticises the Kaiser and causes an uproar in the chamber.

20.—Boutros Pasha Ghali, Egyptian premier, fatally shot by a Nationalist.

England and France urge China to respect the wishes of Russia and Japan regarding the Chin-Chow and Aigun railway.

The new British Parliament formally opened by King Edward with a speech from the throne.

24.—The first division in the British Parliament discloses a government majority of thirty-one, the Irish members refraining from voting.

25.—The domestic conversion of $50,000,000 Japanese foreign bonds is twice-over subscribed.

The Russian budget, for the first time in twenty-two years, shows a surplus.

MARCH

1.—The House of Commons votes authority to the government to obtain necessary loans and to suspend the sinking fund.

Count von Schwerin-Loewitz (Conservative), elected President of the German Reichstag.

6.—Mount Vesuvius is in continual eruption, lava flowing from new fissures.

8.—A mob in Bogota, Colombia, stones the American legation, and tries to wreck property of an American-owned street railway.

14.—Lord Rosebery presents a resolution in the British House of Lords that a peerage should not in itself afford a right to a seat.

15.—The German Reichstag agrees to the introduction of a measure making the chancellor responsible to the Reichstag for the acts of the emperor.

The Prince Regent of China issues an edict to the effect that Parliament will not be established before 1915, the intervening time being necessary to educate the people to self-government.

18.—The Japanese Lower House passes the bill which permits foreigners to own land only when the foreign government grants similar rights to Japanese.

20.—Costa Rica and Panama signed the protocol stating the facts on which their boundary differences will be arbitrated.

21.—The Hungarian premier and members of his Cabinet are injured by missiles thrown by Magyar deputies, following the announcement that the Chamber had been dissolved by royal decree.

Premier Asquith places before the House of Commons a series of resolutions limiting the veto power of the Lords.

The Italian Cabinet resigns, due to the realization that the government's mercantile marine subsidies measure is doomed to defeat. This included a $6,000,000 subsidy in aid of Italian shipping, and the giving to the Italian Lloyd Steamship Company of a twenty-five year subvention for the transportation of mail.

22.—By vote of 175 to 17 the House of Lords renounces its hereditary right to legislate.

The French Senate passes the workingmen's pension bill.

25.—The French Senate concurs with the Chamber in adopting the tariff bill.

27.—The Dental Institute of France places a memorial tablet in the Place des Etats Unis, acknowledging Horace Wells the discoverer of anæsthetics.

28.—The monthly diamond output in German Southwest Africa is 60,000 carats, a large increase in the world's production.

Prince of Monaco grants demands of subjects for Parliament.

30.—First German battleship squadron takes up permanent station at Wilhelmshaven, thereby superseding Kiel as principal naval base of Germany.

APRIL

1.—Mount Etna in state of violent activity, sending down a stream of lava twenty feet high and 1,000 feet wide, from three large craters. The lava flow engulfs the village of Cavaliero.

4.—The British House of Commons, by a vote of 357 to 251, rejects the opposition amendment to Premier Asquith's resolutions regarding the veto power of the Lords.

5.—Ricardo Jiminez again elected President of Costa Rica, the election of Aug. last having been annulled.

The trans-Andean tunnel, connecting Chile and Argentina by rail, is formally opened.

7.—The British House of Commons adopts the first of Premier Asquith's veto resolutions by vote of 339 to 237.

10.—A suffrage-reform demonstration by over 100,000 Socialists and Radicals is peaceably conducted in a suburb of Berlin.

11.—The Pope ratifies the nominations of the Consistory, appointing Abbot Vincent Wehrle of the Monastery of St. Mary as bishop of the new diocese of Bismarck, N. D.; Rev. T. Corbett, rector of the Cathedral of Duluth, as bishop of the new diocese of Crookston, Minn.; and Rev. Joseph F. Busch of Excelsior, Minn., as bishop of Lead, S. D.

12.—Dr. Eugene Doyen, of Paris, announces the discovery of mycolysine, a germ-destroying agent.

14. — An antiforeign uprising in Chang-Sha, China, results in the burning of one Norwegian and two English missions.

The German imperial unearned increment tax bill provides for a general tax, the revenue divided into three parts, forty per cent returning to the municipalities, ten per cent going to the states, and fifty per cent being retained by the imperial government.

The House of Commons passes Premier Asquith's veto resolutions.

The Spanish Parliament is dissolved.

22.—The building trades strike in Berlin is terminated by the award of the Trades Arbitration Court, which grants the workmen an increase Aug. 13th, and a further increase Oct. 1st. The agreement continues in force three years from April 1st.

23.—The first European production of an American grand opera, Nevin's *Poia,* is given in Berlin.

King Albert opens the international exposition at Brussels.

24.—The general election in France passes off quietly, resulting in a slightly increased government majority.

27.—Juan Vincente Gomez elected by Congress President of Venezuela.

28.—The British House of Lords passes without a division the finance bill.

30.—Turkish troops defeat the Albanian forces, clearing Katchanik Pass.

MAY

4.—Commander Peary receives an ovation on the occasion of his lecture in Albert Hall, London, and is presented with the medal of the Royal Geographical Society.

7.—George V proclaimed King of the British Dominions and Emperor of India.

8.—The Bureau of the American Republics, at Washington, receives an appeal, indorsed by ninety per cent of Nicaragua's land holders, requesting the United States to intervene in the affairs of the Republic.

Premier Canalejas and his supporters are returned to power in the Spanish elections.

14.—The Odelsting, the controlling legislative body of Norway, votes to grant universal municipal suffrage to women over twenty-five years of age.

It is announced at Washington that the Chinese railroad loan has been successfully settled, England, France, Germany, and the United States participating equally.

16.—Germany objects to the Anglo-Russian note on Persian loans and railway concessions.

20.—The funeral of the late King Edward is held at London; the burial is at Windsor.

Chile accepts a loan of $13,000,000 from the Rothschilds, of London.

21.—Ecuador and Peru accept Sec. Knox's offer of mediation.

22.—Forcible expulsion of Hebrews from Kief by Russian soldiers is begun.

Elections are held in half the Belgian districts; a combination of Socialists and Liberals fails to overthrow the clerical majority in the Parliament.

A treaty between the United States and Canada, signed at Washington, settles the disputed coast boundary between New Brunswick and Maine.

26.—An edict promulgated establishing national decimal coinage throughout China and orders the cessation of all coinage by provincial mints.

31.—The first Cabinet of United South Africa formed by Gen. Louis Botha, himself premier and minister of agriculture.

JUNE

1.—The British Antarctic expedition starts for the South Pole, Capt. Scott in command. It hopes to arrive in Dec., 1911.

Dr. Lammasch, president, opens the Newfoundland fisheries arbitration tribunal at The Hague.

2.—Hon. S. C. Rolls, an English aviator, in a Wright biplane makes a flight from Dover to Sangatte, France, and back to Dover, fifty miles in ninety minutes, without alighting.

3.—Peru and Ecuador agree to withdraw troops from the frontiers and to accept the mediation of Brazil, Argentina, and the United States.

The Duke of Cornwall, who is sixteen years of age, created Prince of Wales.

In connection with the anniversary of the late king's birthday a list of honors is issued, which includes the creation of seven new peerages.

7.—Herr Dernburg, German Colonial Secretary, resigns. He deprecated taxation of capital invested in African colonies for war contributions.

An earthquake of unusual intensity in southern Italy, including Sicily.

9.—Dr. von Lindequist, former German Under-Secretary, succeeds Herr Dernburg as Secretary of State for the colonies. In 1905 he was governor of German Southwest Africa.

10.—The Duma to-day passed the Finnish bill giving that body authority over the Finnish Diet. The vote on the third reading was 164 to 23.

Sir Charles Hardinge, British Under-Secretary of State for Foreign Affairs, appointed Viceroy of India.

14.—The World's Missionary Conference of all Protestant churches opens at Edinburgh, Lord Balfour presiding.

17.—Sir Edward Grey, speaking in the House of Commons, warns the Egyptian Nationalists that if the symptoms of agitation against the British occupation continue, Egyptian ministers promoting British policy will be upheld by direct British intervention.

23.—The International Congress of Chambers of Commerce, meeting in London, postpones for two years consideration of Sec. of State Knox's proposal for a court of arbitral justice.

25.—The address of Emperor Francis Joseph before the newly elected Parliament in Austria-Hungary foreshadows electoral reform and increased military expenditures.

26.—Antonio Teixeira de Sousa forms a new ministry in Portugal.

Porfirio Diaz is reëlected for his eighth term as President of Mexico, Ramon Corral being again chosen Vice President. There were cast for Gen. Diaz, 18,829 electoral votes; for Francisco Madero, 221 electoral votes. For Vice President, Ramon Corral, 17,373; Teodore Depesam, 1,427.

28.—Ibrahim Wardani, the assassin of Boutros Pasha Ghali, the Egyptian Premier, hanged at Cairo.

30.—The British budget for 1910–11, introduced in the House of Commons by Mr. Lloyd-George, Chancellor of the Exchequer, calls for expenditures of $1,000,000,000.

Announcement is made of the opening of Port Arthur to the shipping of all nations.

JULY

3.—Anticlerical demonstrations occur in Madrid and other Spanish cities.

4.—A new ministry is formed in Denmark, with Klaus Bernstein as Premier.

An agreement is signed at St. Petersburg, between Russia and Japan, relating to railway matters in the Far East.

The eighth German Dreadnought launched at Danzig.

6.—The Albert Medal of the Royal Society of Arts awarded to Mme. Curie for the discovery of radium.

11.—The Vatican protests against the Spanish Government's action in the matter of religious orders in Spain.

12.—The Fourth International Conference of American Republics formerly opened at Buenos Ayres.

The House of Commons, 299 to 190, passes the second reading of the bill granting parliamentary franchise to women possessed of property and already voting in municipal elections, but postpones final consideration until next year.

16.—The eighth International Railway Congress closes in Berne, Switzerland, to meet in 1915 at Berlin. There were present 1,500 representatives of government and private railways in nearly all civilized countries.

17.—Japan notifies the European Powers that commercial treaties will terminate at the end of a year.

18.—The outstanding differences between Brazil and Peru have been settled by an arbitration court, under the presidency of the Apostolic Nuncio.

21.—Señor Roque Saenz-Pena is proclaimed President of Argentina.

Pres. Madriz, of Nicaragua, forms his first complete Cabinet.

29.—The Spanish Ambassador to the Vatican is recalled.

The new German Foreign Secretary, Herr von Kiderlen-Wachter, is installed.

AUGUST

2.—The Canadian Grand Trunk Railway strike ends in a compromise. There is a general increase of wages of fifteen per cent; wages to reach the Canadian Pacific rates east of Fort William from Jan. 1, 1912.

3.—The British Parliament adjourns until Nov. 15th.

Eight thousand mechanics in the Hamburg shipyards go on strike, demanding a ten per cent increase in wages.

4.—Alexander Guchov, President of the Russian Duma, begins a sentence of four weeks' imprisonment for fighting a duel.

6.—Official figures place the number of deaths from cholera in Russia during the week at 8,679.

8.—Pres. Carlos E. Restrepo and the new Cabinet of Colombia, assume their duties under peaceful conditions.

14.—Belgian exposition at Brussels destroyed by fire, loss $10,000,000.

16.—Sir Ernest Cassel is to establish a fund of $1,000,000 to benefit impoverished Germans seeking employment in England, and poor Englishmen seeking work in Germany.

18.—Emperor Francis Joseph of Austria celebrates his eightieth birthday.

20.—Dr. José D. Madriz resigns as President of Nicaragua, naming as his successor José Dolores Estrada, a brother of the revolutionary leader.

22.—The annexation of Korea by Japan takes place.

27.—The Norwegian-American Steamship Line established at Christiania with a capital of $2,800,000.

28.—The principality of Montenegro becomes a kingdom by an agreement of the Powers.

29.—Gen. Juan J. Estrada assumes the Presidency of Nicaragua and selects a Cabinet.

31.—Turkey grants to American religious, educational, and benevolent institutions exemption from the Ottoman law and permits them to hold land.

At election in Portugal the Monarchists win a sweeping victory, although the Republicans made notable gains.

SEPTEMBER

5.—Acting Pres. E. F. Albano of Chile dies; Minister of Justice Emiliano Figueroa is appointed his successor.

11.—Pres. Estrada postpones the Nicaraguan elections for a year.

13.—Nobel Prize for chemistry is awarded Prof. Otto Wallach, Göttingen.

15.—The Finnish Diet reassembles and reëlects Pres. Svinhufvud, who makes a speech urging resistance to Russian attacks upon Finland's autonomy.

16.—The centennial celebration of the independence of Mexico was celebrated by the dedication of a monument at Mexico City. The eightieth birthday of Pres. Diaz was also celebrated.

17.—France demands of Turkey explanations and satisfaction for alleged treaty violations in Tunis and Algiers.

23.—The President of the Finnish Diet refuses to submit two imperial bills on the ground that they are unconstitutional.

24.—The National Council of Persia elect Nasir-el-Mulk regent, to succeed the late Azad-ul-Mulk.

OCTOBER

2.—The new Chinese Imperial Senate opened by the Regent.

4.—A successful revolution is effected in Portugal.

6.—The shipbuilders' strike at Berlin ends in a victory for the strikers.

The lockout of 130,000 cotton mill operatives in England ends.

8.—The Finnish Diet is dissolved by imperial decree and new elections are ordered in Jan.

11.—The strike of the Northern Railway of France spreads to the Western line; the government calls on 30,000 employees to resume their posts as reserves.

Emperor William delivers the chief address at the centennial of the University of Berlin.

12.—The Swiss Republic recognizes the Republic of Portugal.

15.—The French railway strike is broken, the directors agreeing to an increase in the men's wages.

16.—It is estimated that 5,000 members of religious orders, expelled from Portugal, have taken refuge in Spain.

17.—Great Britain threatens to occupy certain centers of unrest in Persia unless order is restored within three months.

19.—An agreement is reached between France and Turkey for the floating of a $30,000,000 loan in the Republic.

20.—The first of two mammoth, triple-screw White Star liners, the *Olympic*, launched at Belfast.

21.—The Nobel medical prize awarded to Prof. Kossel of Heidelberg, an expert in physiological chemistry, who has done pioneer work in the artificial production of organic material.

22.—The Russian Government issues a ukase against German immigration into the three western frontier provinces.

26.—British consols fall to 78¾, the lowest price since 1847.

NOVEMBER

1.—The military forces of Portugal threaten to overthrow the provisional government unless promised promotions and pensions are granted.

A plot to overthrow the Peruvian Government is checked, and the leaders arrested.

The czar approves a measure extending the zone of residence of Jews in Russia.

2.—Aristide Briand, the French premier, hands the resignations of the ministry to Pres. Fallieres.

3.—Lord Morley resigns the office of Secretary of State for India.

4.—An imperial decree announces that the first Chinese Parliament will be convoked in 1913, two years earlier than had been promised.

6.—The Nobel prize for physics is awarded to Prof. Johannes Diderik Van der Wals, of Amsterdam.

9.—Sir Vesey Strong, London's first prohibition lord mayor, is inducted into office. The civic pageant includes four Shakespearian scenes connected with the history of London.

11.—The diplomatic representatives of the United States, Germany, Russia, Sweden, and Norway officially recognize the republican government in Portugal.

14.—The Nobel prize for literature is awarded to Paul Johann Ludwig Heyse, the German poet and novelist.

28.—The British Parliament is dissolved.

DECEMBER

10.—The Nobel peace prize for 1910 is awarded to the International Permanent Peace Bureau at Berne, Switzerland.

14.—Dispatches from Rome report serious floods, the River Tiber being 21 feet above its normal level.

AMERICAN NECROLOGY

Agassiz, Alexander, SS. *Adriatic*, Mar. 28th, aged 75; prominent as professor, civil engineer, author, explorer, naturalist, philanthropist, and president of the Calumet and Hecla Mining Company. He was the most remarkable representative in America of the scholar in business.

Alexander, Eben, Knoxville, Tenn., Mar. 12th, aged 59; former minister to Greece, a Yale graduate and prominent educator.

Ames, James Barr, Jan. 8th, aged 64; dean of the Harvard Law School.

Arnold, Warren O., Westerly, R. I., Apr. 1st; prominent wool manufacturer and former congressman.

Atkinson, Charles E., Chicago, June 12th; a well-known engineer, and builder of the Ferris wheel of the World's Fair at Chicago in 1893. He built the bridge at Thebes across the Mississippi, and the viaduct over Lawlor's canyon at Vollmer, Idaho.

Barker, George Frederick, Philadelphia, May 25th, aged 70; emeritus professor of physics at the University of Pennsylvania and an inventor of scientific apparatus.

Blackwell, Elizabeth, June 1st, aged 89; a pioneer woman physician widely known in Europe and the United States.

Blake, William Phillips, Berkeley, Cal., May 21st, aged 84; noted geologist and international explorer.

Bowers, Lloyd W., Boston, Sept. 9th, aged 51; appointed solicitor general by Pres. Taft Mar. 12, 1909.

Bowser, Edward A., Feb. 21st, aged 65; former professor of mathematics at Rutgers College.

Bradley, Luther P., Mar. 13th, aged 88; brigadier general, U.S.A.

Brayton, Gen. Charles R., Providence, R. I., Sept. 23d, aged 70; blind leader of the Rhode Island Republican organization and member of the National Republican Committee.

Brewer, David Josiah, Washington, D. C., Mar. 28th, aged 73; justice of the Supreme Court.

Brewer, William Henry, New Haven, Nov. 2d, aged 82; professor emeritus of agriculture at Yale University, and former president of the Arctic Club; traveler and author.

Broward, Napoleon Bonaparte, Jacksonville, Fla., Oct. 1st, aged 53; former governor of Florida and recently nominated for United States Senator.

Brownlow, Walter Preston, Johnson City, Tenn., July 8th, aged 60; represented the first Tennessee district in Congress for six terms, since 1897.

Buckham, Matthew H., Burlington, Vt., Nov. 29th, aged 78; president of the University of Vermont.

Byrnes, Thomas, New York, May 7th, aged 68; former superintendent of police in New York.

Carleton, Henry G., Dec. 10th, aged 56; playwright.

Carlisle, John G., July 31st, aged 74; formerly United States Senator; for twelve years a member of Congress, chosen Speaker during his last three terms; Secretary of the Treasury under Pres. Cleveland.

Clark, Galen, Oakland, Cal., Mar. 24th, aged 96; for twenty years guardian of the Yosemite Valley.

Clay, Alexander Stephens, Atlanta, Ga., Nov. 13th, aged 56; United States Senator from Georgia.

Clemens, Samuel Langhorne (Mark Twain), Danbury, Conn., Apr. 21st, aged 74; humorist and author.

Converse, John H., Rosemont, Pa., May 3d, aged 69; philanthropist, prominent Presbyterian layman; president of the Baldwin Locomotive Works.

Crowninshield, Caspar S., Sept. 26th, aged 39; American Consul at Naples.

Cudahy, Michael, Chicago, Nov. 27th, aged 69; founder of the Cudahy Packing Company.

Dana, William B., Oct. 10th, aged 81; founder and editor of the *Commercial and Financial Chronicle*.

Daniel, J. W., Lynchburg, Va., June 29th, aged 67; United States Senator from Virginia.

Darling, Flora A., Jan. 6th, aged 69; founder of the Daughters of the American Revolution and other patriotic societies.

Davis, Mrs. Rebecca Harding, Mount Kisco, N. Y., Sept. 29th, aged 79; novelist and noted editorial writer.

Day, Charles Orrin, Andover, Mass., Apr. 6th, aged 59; prominent Congregational clergyman and former president of the Andover Theological Seminary.

Dayton, Charles Willoughby, New York, Dec. 7th, aged 65; ex-postmaster of New York; Supreme Court justice since 1906.

Dickins, Francis W., New York, Sept. 15th, aged 76; rear admiral, prominent officer in the naval service.

Dodsworth, William, Feb. 7th, aged 84; editor and publisher of New York *Journal of Commerce*.

Dolbear, Amos Emerson, Feb. 23d, aged 73; former professor of physics at Tufts College, and inventor of telegraph and telephone appliances.

Dolliver, Jonathan P., Fort Dodge, Ia., Oct. 15th, aged 52; Senator from Iowa.

Draper, William F., Jan. 28th, aged 68; former member of Congress from Massachusetts and American Ambassador to Italy.

Eckert, Thomas T., Oct. 20th, aged 88; former president of the Western Union Telegraph Company.

Eddy, Mary Baker, Boston, Dec. 3d, aged 90; founder of the Church of Christ, Scientist.

Edmands, J. Rayner, Baltimore, Md., Mar. 26th, aged 60; for twenty-five years with the observatory staff of Harvard University.

Elliott, A. Marshall, Nov. 9th, aged 64; scholar and professor of romance languages at Johns Hopkins University.

Everett, William, Feb. 16th, aged 71; one of the great American Latinists of his day, school teacher at Quincy, Mass., and former member of Congress; son of Edward Everett.

Foster, J. Ellen, Washington, D. C., Aug. 11th, aged 70; noted as a lawyer, temperance lecturer, and advocate of missions and philanthropy. One of three women to represent the United States at the International Red Cross Conference in Russia in 1903.

French, Samuel Gibbs, Florala, Ala., Apr. 20th, aged 92; at the time of his death the oldest living graduate of West Point in the Confederate service. He was a major general in the Civil War.

Fuller, Melville Weston, Sorrento, Me., July 4th, aged 77; for twenty-two years chief justice of the United States Supreme Court.

Grant, Hugh J., New York, Nov. 3d, aged 55; twice mayor of New York City. Declined the leadership of Tammany.

Gray, William M., Mar. 9th, aged 57; authority on X-ray treatment.

Harris, Joseph S., Germantown, Pa., June 2d, aged 74; former president of the Reading and Jersey Central railroads.

Hawkins, Gen. Hamilton S., Glens Springs, N. Y., Mar. 27th, aged 76; governor of the National Soldiers' Home, Washington, D. C.; participated in Civil and Spanish wars.

Hichborn, Philip, Washington, D. C., May 1st, aged 71; rear admiral, retired.

Hill, David Bennett, Albany, N. Y., Oct. 20th, aged 67; former president of the New York State Bar Association; governor of New York 1885–92; United States Senator 1891–97.

Homer, Winslow, Sept. 29th, aged 74; artist.

Hopkinson, John P., Jan. 14th, aged 70; founder of the Hopkinson School in Boston.

Howe, Julia Ward, Middletown, R. I., Oct. 17th, aged 91; noted author, reformer and philanthropist.

Hoyt, Henry M., Washington, D. C., Nov. 20th, aged 54; counselor for Department of State.

Hunnewell, James Frothingham, Nov. 12th, aged 80; writer on historical subjects.

Huyler, John S., Rye, N. Y., Oct. 1st, aged 64; philanthropist and merchant.

James, William, Aug. 26th, aged 68; noted philosopher and psychologist of Harvard University.

Jessup, Rev. Henry Harris, D.D., Syria, Apr. 28th, aged 78; for fifty-three years a Presbyterian missionary.

Jones, John Pembroke, Pasadena, Cal., May 25th, aged 85; oldest graduate of the United States Naval Academy and veteran of the Mexican and Civil wars. He was executive officer of the *Merrimac* during the *Monitor-Merrimac* engagement.

Kasson, John A., Washington, D. C., May 18th, aged 89; ex-minister to Austria and Germany, and envoy to Samoan Conference.

Kelly, Myra (Mrs. Allan Macnaughton), Torquay, Eng., Mar. 30th; writer of stories of ghetto and child life.

La Farge, John, Nov. 14th, Providence, R. I., aged 76 years; American painter and stained-glass designer.

Lathrop, John, Aug. 24th, aged 75; ex-judge of the Massachusetts Supreme Court.

Lexow, Clarence, Nyack, N. Y., Dec. 30th, aged 58; ex-State Senator, and chairman of Senate committee for investigation of New York police department, 1894.

Lovering, William C., Feb. 4th, aged 73; Congressman from Massachusetts.

McEnery, Samuel Douglas, New Orleans, La., June 28th, aged 73; United States Senator from Louisiana since 1896.

McVickar, William Neilson, June 28th, aged 67; Protestant Episcopal bishop of Rhode Island.

Merrell, Edward H., Feb. 23d, aged 75; former president of Ripon College, Wisconsin.

Mills, Darius Ogden, New York, Jan. 4th, aged 84; banker and philanthropist.

Moody, William Vaughn, Colorado Springs, Colo., Oct. 17th, aged 41; author, playwright, and authority on English literature.

Morgan, Morris H., Mar. 16th, aged 51; professor of classical philology at Harvard University.

Mulholland, St. Clair A., Feb. 17th, aged 71; major general, retired, U.S.A.

Nelson, Alexander Lockhart, Aug. 31st, aged 83; for more than fifty years professor of mathematics in Washington and Lee University.

Niles, William H., Sept. 13th, aged 72; professor of geology at Massachusetts Institute of Technology.

Osborn, Charles J., St. Louis, Mo., Apr. 18th, aged 84; member of the Associated Press for fifty-five years.

Overstreet, Jesse, Indianapolis, Ind., May 27th, aged 51; Congressman for ten years, and chairman of the House Committee on post offices.

Page, Ralph B., Aug. 8th, aged 32; professor of history at Rutgers College.

Paine, Robert Treat, Boston, Aug. 12th, aged 74; a distinguished philanthropist.

Patterson, Robert W., Philadelphia, Pa., Apr. 1st, aged 54; president of the *Chicago Tribune* Company.

Perkins, James Breck, Rochester, N. Y., Mar. 11th, aged 62; Congressman from New York State.

Platt, Thomas Collier, Mar. 6th, aged 76; ex-United States Senator and for many years Republican leader of the State of New York.

Porter, William Sidney, New York, June 6th, aged 46; well-known short story writer, under the pen name of "O. Henry."

Pritchett, Rev. Carr Waller, Mar. 18th, aged 87; well-known educator and astronomer.

Rainey, Dr. Thomas, New York City, Mar. 29th, aged 86; journalist, financier and East River Bridge enthusiast.

Rhoades, Lewis A., Aug. 30th, aged 50; professor of Germanic languages and literature in Ohio State University.

Riddle, George, Boston, Nov. 26th, aged 59; former Shakespearian actor and reader.

Robinson, Franklin Clement, Brunswick, Me., May 25th, aged 58; professor of chemistry and mineralogy at Bowdoin College. Inventor of apparatus for using formaldehyde in disinfection.

Rolfe, William J., Cambridge, Mass., July 7th, aged 83; the noted Shakespearian scholar, author, and editor.

Rugg, Henry W., D.D., July 21st, aged 78; grand master of the Knights Templar of the United States.

Shaw, Charles H., Aug. 8th, aged 38; professor of biology at the University of Pennsylvania.

Silliman, Dr. Horace B., New York, May 4th, aged 84; contributor of large sums to educational and religious institutions.

Simmons, J. Edward, Aug. 5th, aged 68; New York banker and president of the Chamber of Commerce.

Smith, Charles Sprague, Montclair, N. J., Mar. 29th, aged 57; professor of modern languages at Columbia University, and organizer of the Comparative Literature Society, 1896. In 1897 he founded the People's Institute, intended to provide the unorganized masses, by illustrated lectures, dramatic presentations and speeches with a continuous education in history and literature in their relation to modern problems.

Smith, Goldwin, Toronto, Can., June 7th, aged 87; English political economist, author and professor of history at Oxford and later professor of English and constitutional history at Cornell University.

Smith, John Carson, Chicago, Jan. 1st, aged 78; prominent Mason and author of Masonic histories.

Spellmeyer, Henry W., Mar. 12th, aged 62; bishop of the Methodist Episcopal Church.

Stevens, John Austin, Newport, R. I., June 16th, aged 83; founder of Sons of the Revolution, Loyal National League, and the *Magazine of American History,* of which he was long the editor.

Sumner, William Graham, Englewood, N. J., Apr. 12th, aged 70; professor of political and social science at Yale University. Author of volumes on financial, political, and social subjects.

Terrell, Edwin Holland, San Antonio, Tex., June 30th, aged 62; former American minister to Belgium and representative of the United States in various important diplomatic services.

Thomas, Cyrus, June 26th, aged 85; eminent authority on North American Indians.

Tirrell, Charles Q., Natick, Mass., July 31st, aged 65; Congressman of the fourth Massachusetts district.

Treat, Charles H., New York, May 30th, aged 68; formerly Treasurer of the United States, 1905–09.

Tree, Lambert, New York, Oct. 9th, aged 78; ex-judge of the Circuit Court, and former minister to Belgium and Russia.

Truax, Charles H., Jan. 14th, aged 63; formerly justice of the New York Supreme Court.

Van Cleave, J. W., St. Louis, Mo., May 15th, aged 61; former president National Manufacturers' Association, and a leader in the fight against boycotts.

Vose, George Leonard, Brunswick, Me., Mar. 30th, aged 79; professor of civil engineering at Bowdoin College, and later at the Massachusetts Institute of Technology. Well-known writer on engineering subjects.

Walsh, Thomas F., Washington, D. C., Apr. 8th, aged 59; mine owner and Colorado commissioner to the Paris Exposition, 1899.

Ward, John Quincy Adams, New York, May 1st, aged 80; dean of American sculptors.

Webster, Sidney, Newport, R. I., May 30th, aged 82; an authority on corporation and international law.

Weir, Levi Candee, New York, Mar. 28th, aged 68; president Adams Express Company.

Whitman, Charles Otis, Chicago, Dec. 6th, aged 68; head of department of zoölogy and curator of zoölogical museum at Chicago University.

Whitmore, Willard S., Oct. 18th, aged 68; inventor of the *papier-mache* matrix process of electrotyping.

Whitney, Myron W., Sandwich, Mass., Sept. 19th, aged 74; noted bass singer in oratorio and on the stage.

Williams, George H., Apr. 4th, aged 87; ex-United States Senator and attorney general during Pres. Grant's second term.

Winans, Samuel Ross, July 25th, aged 55; professor of Greek at Princeton University.

Winslow, Homer, Scarboro, Me., Sept. 29th, aged 74; famous American painter of outdoor life.

Woodward, James T., New York, Apr. 10th, aged 70; financier and president of the Hanover National Bank.

FOREIGN NECROLOGY

Albano, Elias Fernandez, Santiago, Chile, Sept. 6th; vice president of Chile and acting president of the Republic after the death of Pres. Montt, Aug. 16th.

Azad-el-Mulk, Teheran, Persia, Sept. 22d, aged 70; Regent of Persia, and chief of the powerful Kajar family.

Bjornson, Bjornstjerne, Paris, Apr. 26th, aged 78; Norwegian poet, novelist, and dramatist, reformer, and advocate of universal peace.

Chula, Longkorn, Bangkok, Siam, Oct. 23d, aged 57; progressive ruler and King of Siam for forty years.

Delisle, Leopold, July 22d, aged 84; French historian.

Dunant, Henri, Heiden, Switz., Oct. 30th, aged 82; founder of the International Red Cross Society.

Drummond, Sir George, Feb. 2d, aged 81; member of Dominion Senate, and president of Bank of Montreal.

Edward VII, London, May 6th, aged 68; King of Great Britain, Ireland and of the British Dominions beyond the seas, and Emperor of India.

Fraser, Walter Arthur, Feb. 22d, aged 64; former proprietor of the London *Times.*

Furnivall, Frederick James, July 2d, aged 85; English Shakespearian scholar.

Galle, Johann G., Potsdam, July 11th, aged 98; German astronomer, who first observed the planet Neptune.

Giffen, Sir Robert, London, Apr. 12th, aged 73; journalist, financial writer, and statistician.

Gilibert, Charles, New York, Oct. 11th, aged 44; noted barytone.

Gude, Ove, White Sulphur Springs, W. Va., June 30th, aged 57; Norwegian minister to the United States, talented linguist and musician.

Haden, Sir Francis Seymour, June 1st, aged 91; noted English etcher.

Huggins, Sir William, London, May 12th, aged 86; astronomer noted for his work in connection with the achievements of spectrum analysis.

Hunt, William Holman, London, Sept. 7th, aged 83; the English painter, who with Millais, founded the pre-Raphaelite movement.

Knaus, Ludwig, Berlin, Dec. 7th, aged 81; genre painter.

Koch, Robert, Baden Baden, May 27th, aged 66; famous bacteriologist.

Van Lynden, Baron Robert Melvil, Apr. 27th, aged 67; secretary of the permanent Court of Arbitration at The Hague.

Von Leyden, Ernst, Berlin, Oct. 5th, aged 78; eminent physician and scientist.

Montt, Pedro, President of Chile, Bremen, Aug. 16th, aged 64; his influence was directed toward developing Chile's trade and natural resources.

Nabuco, Joaquim, Jan. 17th, aged 60; Brazilian Ambassador to the United States.

Newnes, Sir George, London, June 9th, aged 59; founder of *The Westminster Gazette, Tit-Bits,* and the *Strand Magazine,* and the donor of the international chess trophy bearing his name.

Nightingale, Florence, London, Aug. 13th, aged 90; famous nurse of the Crimean War, and the only woman possessing the Order of Merit. Presented with $250,000 by the British Government in appreciation of her services, she founded with it St. Thomas's Hospital, in which is the Nightingale Training School for nurses.

Nutt, Alfred Trubner, Melun, France, May 21st, aged 54; well-known London publisher, and president of Folk-lore Society.

O'Connor, James, Mar. 12th, aged 74; member of Parliament and Irish Nationalist.

Prior, Melton, London, Nov. 2d; war correspondent and artist, serving through twenty-four campaigns and revolutions for the *Illustrated London News.*

Reich, Emil, Dec. 12th, aged 56; historian and philosopher.

Rod, Louis Edouard, Jan. 29th, aged 53; French novelist.

Rolls, Hon. Charles S., July 12th, aged 33; the English aviator who crossed the Channel, killed by a fall of 100 feet in his biplane at Bournemouth, Eng.

Schiaparelli, Giovanni Virginio, July 4th, aged 75; discoverer of the canal-like markings on the planet Mars.

Spencer, fifth earl, J. Poyntz Spencer, London, Aug. 13th, aged 75; he twice held the post of viceroy of Ireland, besides other public offices.

Sossnitz, Joseph L., Mar. 2d, aged 73; Jewish scientist and author.

Tolstoy, Count Leo, Astapova, Russia, Nov. 20th, aged 82; novelist and social reformer.

Vandal, Albert, Aug. 30th, aged 57; French academician and historical writer.

Wernigerode, Count Udo von Stolberg, Feb. 19th, aged 70; president of the German Reichstag.

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